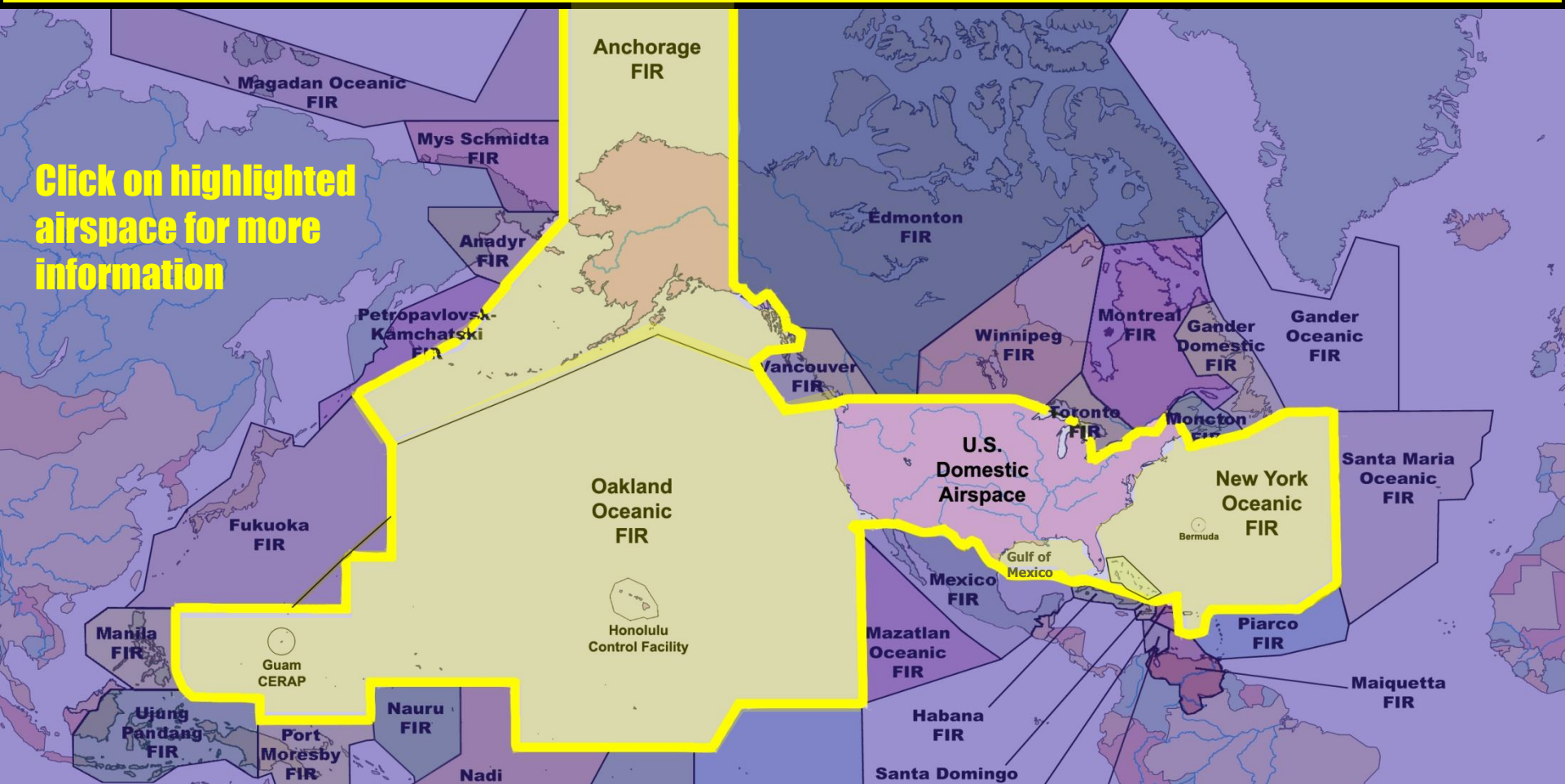




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# ***VIRTUAL OCEANIC RESOURCE GUIDE***

**Click on highlighted  
airspace for more  
information**



**1**

**2**

**3**

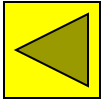
**Oceanic Environment**

Click Tab 2 or 3 for more

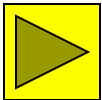
# Navigation Key



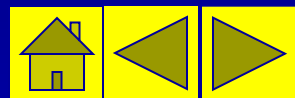
**Home – Beginning of Presentation**



**Last Slide Viewed**



**Next Slide**

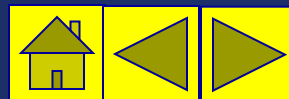


# Oceanic Environment

- **Oceanic Environment**
- **Financial Impact**
- **Oceanic Operations**
- **Pacific Operations**
  - Oakland Oceanic FIR
  - Anchorage FIR
- **Atlantic Operations**
  - New York Oceanic FIR
  - West Atlantic Route System (WATRS)
- **Gulf of Mexico Operations**
- **Bordering FIRs**
  - Interfaces with the U.S.
- **Global Datalink Coverage**
- **Global RVSM Implementation**



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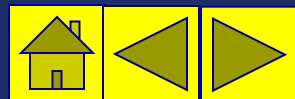


# Oceanic Environment – con't

- ICAO Regional Offices
- Oceanic Working Groups
- Oceanic Air Traffic Control Automation Systems
  - ATOP
  - DOTS+
  - Micro-EARTS
  - OFDPS
- Future Initiatives
- Useful Links



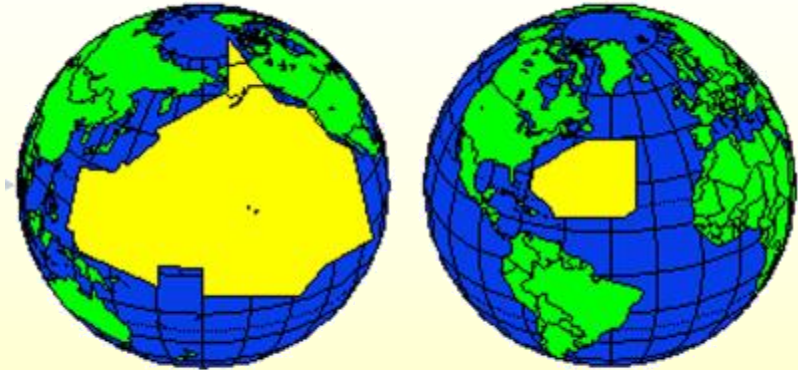
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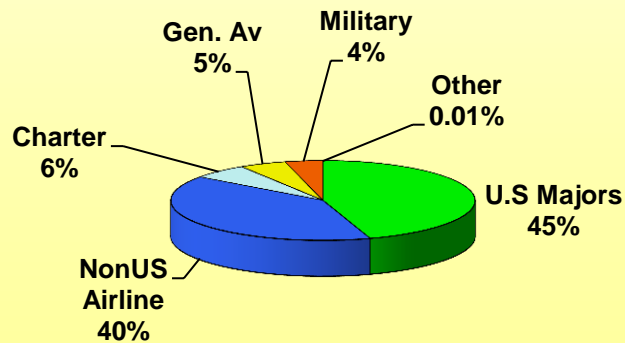
# The Oceanic Environment

Unique Airspace with Complex Separation Standards and Coordination Rules

International Civil Aviation Organization (ICAO) delegated 24M sq miles of international oceanic airspace to the US



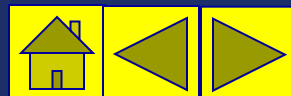
## Oceanic User Community



Facility	Miles of Airspace	Flights per day
<a href="#">New York (ZNY)</a>	3.3M sq miles	~500
<a href="#">Oakland (ZOA)</a>	18.6M sq miles	~650
<a href="#">Anchorage (ZAN)</a>	2.75M sq miles	~200

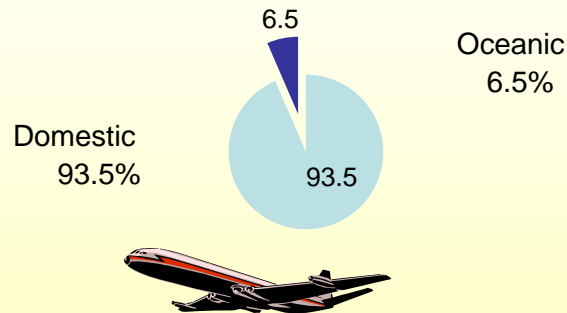


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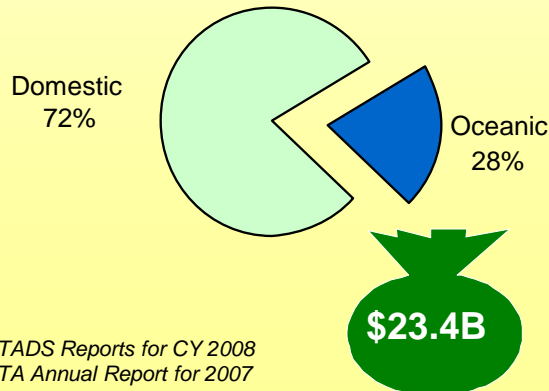
# Financial Impact of Oceanic Air Traffic Control

Total Air Carrier Aircraft Handled in U.S.  
Controlled Airspace = 16.4 M

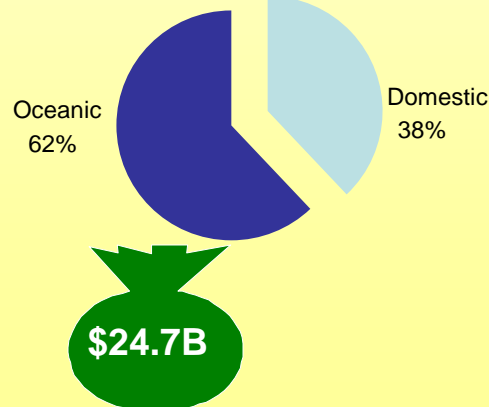


Although oceanic aircraft represent only a small percentage of the overall aircraft handled in U.S. controlled airspace, the revenue generated is disproportionately large.

Passenger Revenue  
\$84.2B



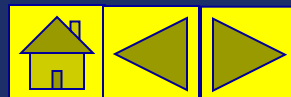
Cargo Revenue  
\$39.8 B



ATADS Reports for CY 2008  
ATA Annual Report for 2007

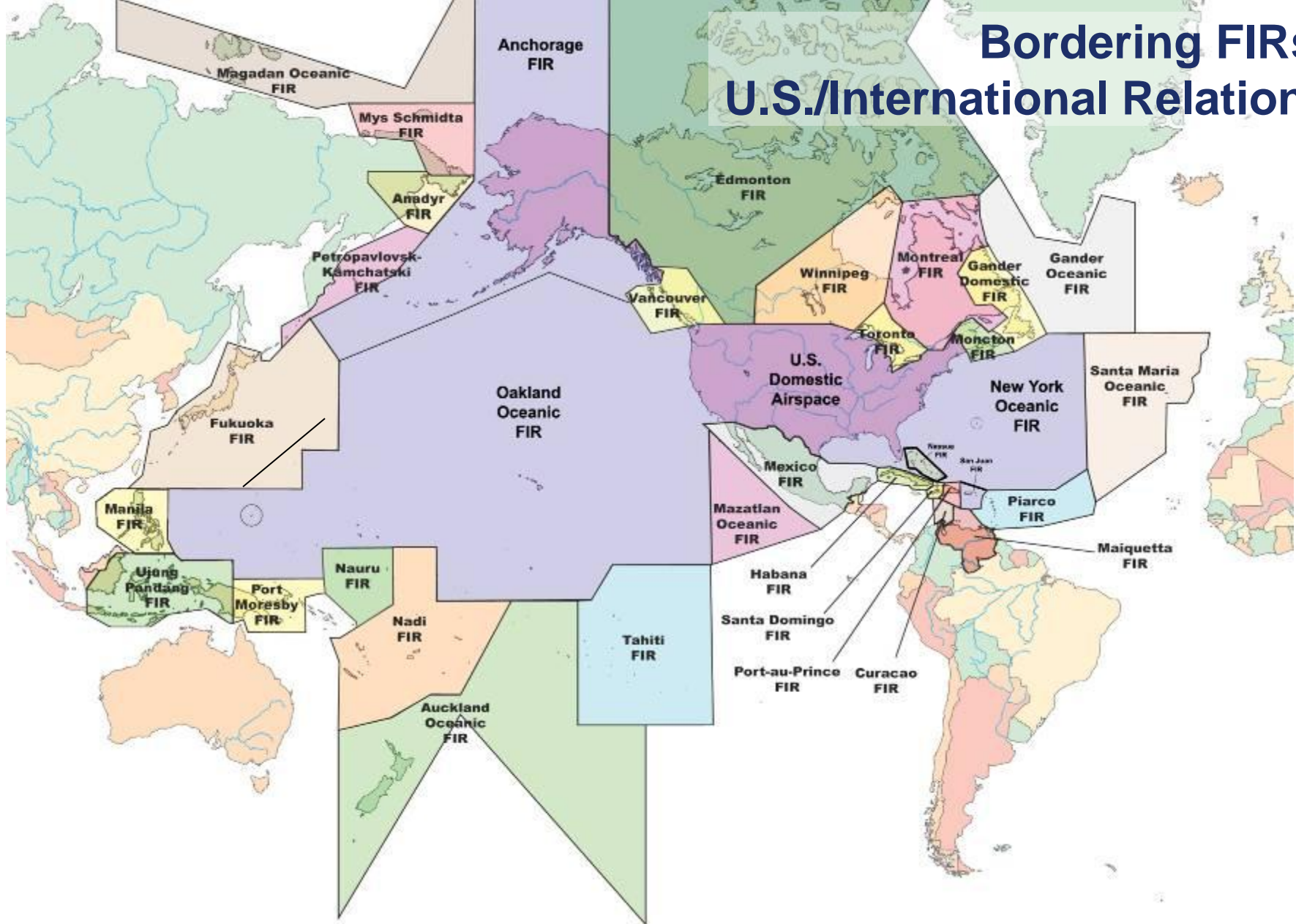


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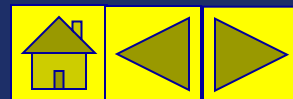




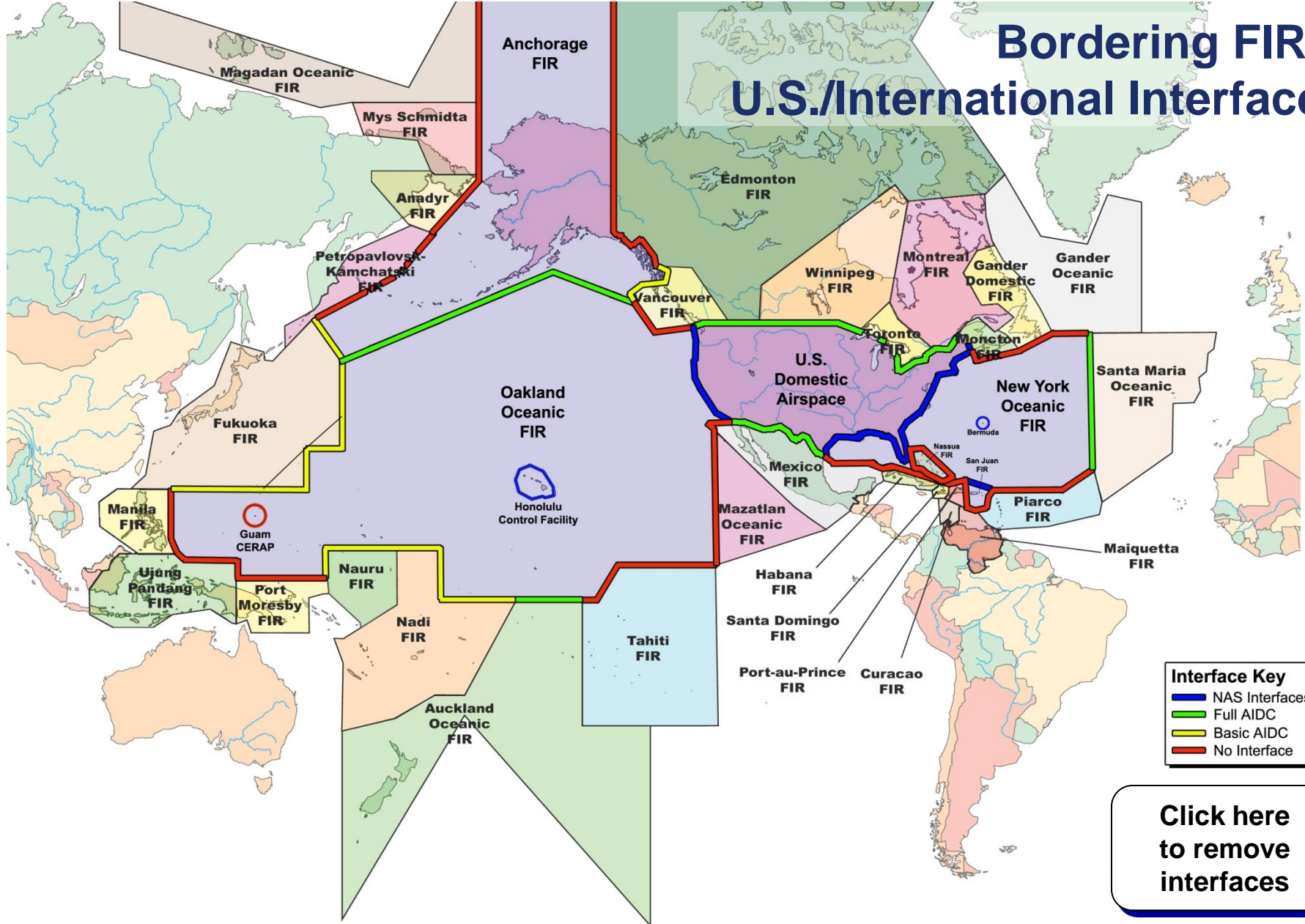
# Bordering FIRs: U.S./International Relations



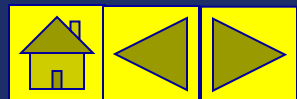
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# Bordering FIRs: U.S./International Interfaces



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# ICAO Regional Offices

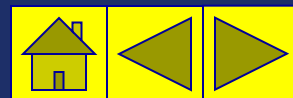
Click on any link below to visit that Regional Office's homepage



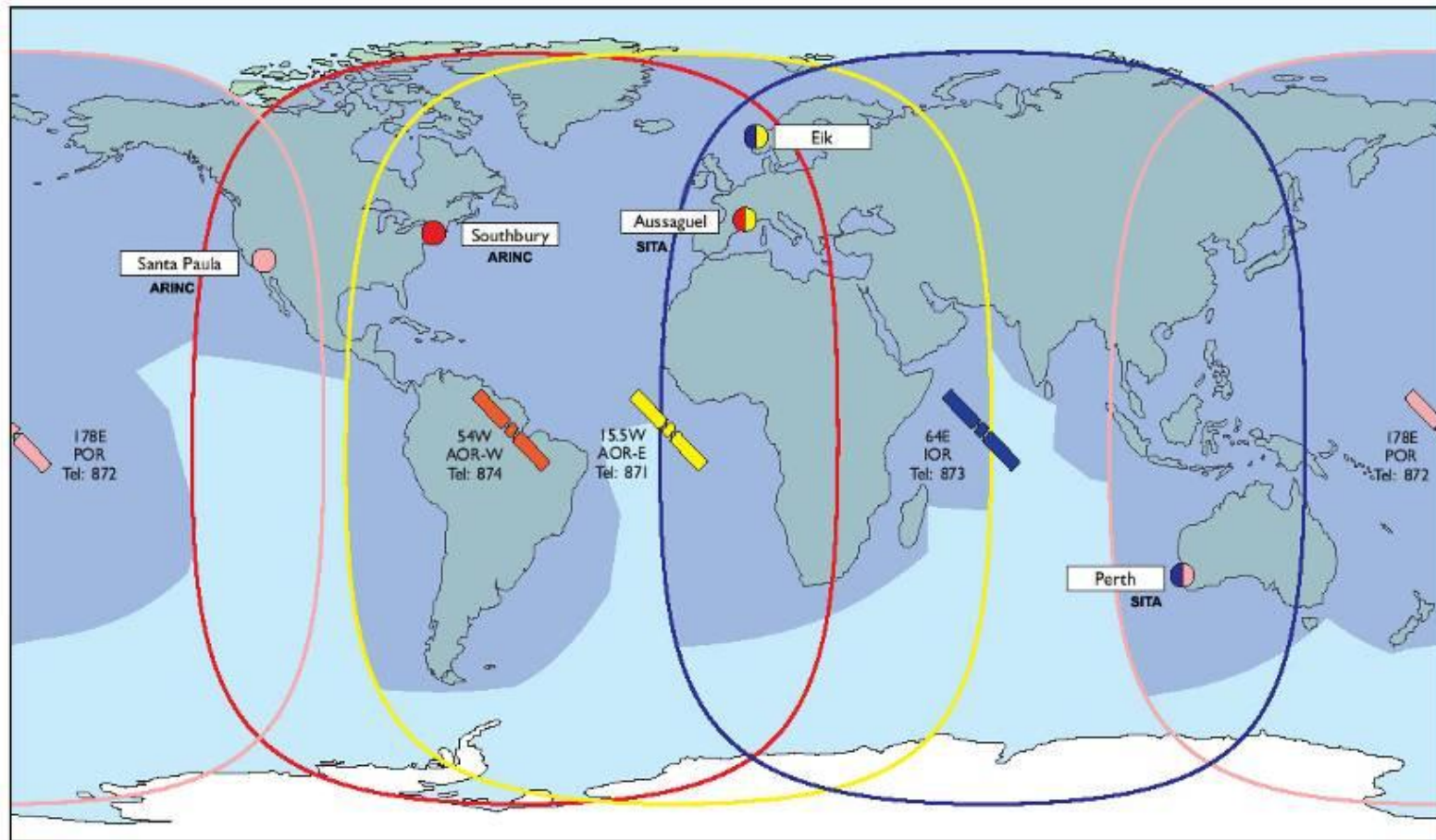
**NOTE:** Clicking on the links above will take you to external sites not maintained by the FAA



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# Global Datalink Coverage



Limit of global beam coverage for Inmarsat Aeronautical Services

— Pacific Ocean Region — Atlantic Ocean Region-East  
— Atlantic Ocean Region-West — Indian Ocean Region

Inmarsat Aeronautical  
Spot Beam coverage

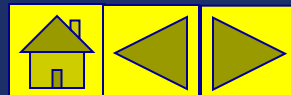
No Spot Beam coverage

The map depicts Inmarsat's expectations of coverage but does not represent a guarantee of service. The availability of service at the edge of coverage areas fluctuates depending upon a variety of conditions.

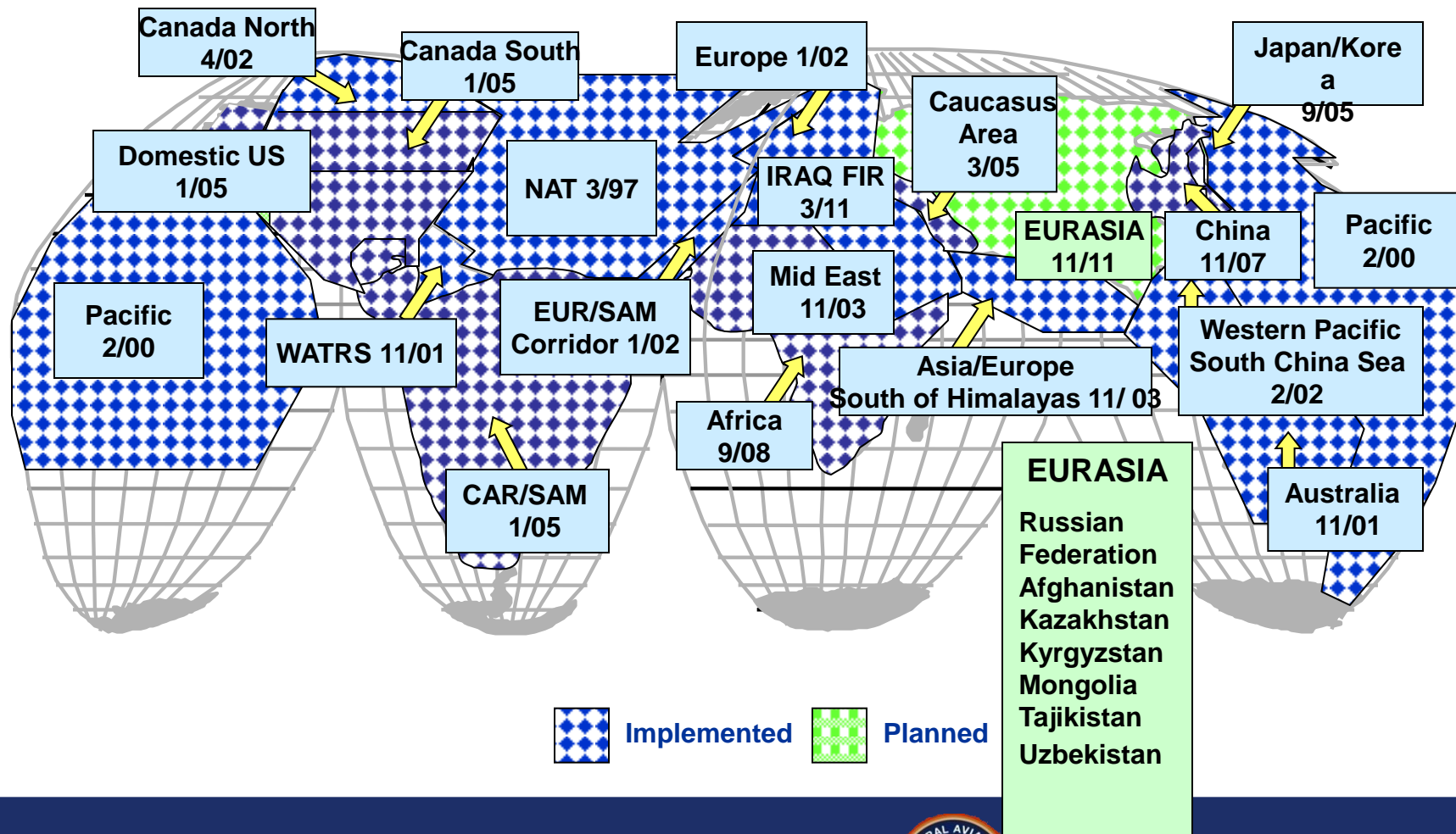
© Inmarsat Ltd. April 2005



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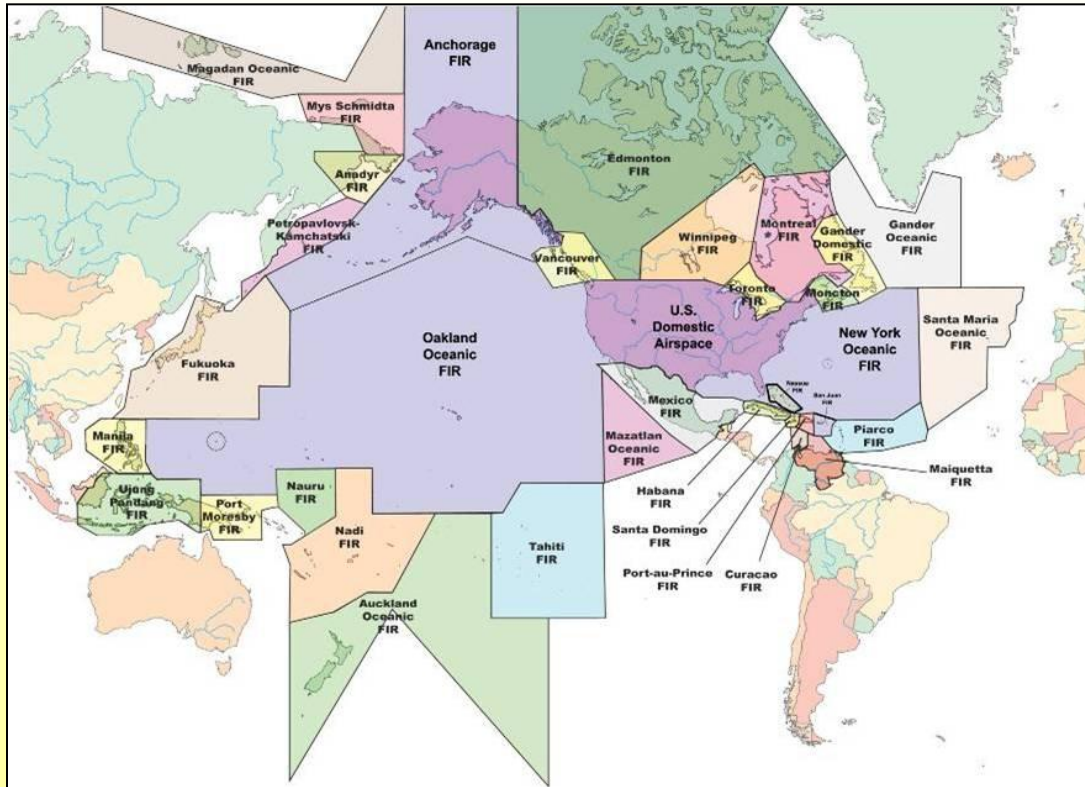
# Global RVSM Implementation As of March 2011



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V 03-112.0

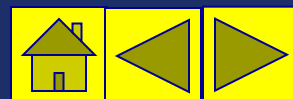
# Oceanic Operations



- [Separation Standards](#)
- [NAV/COM Requirements](#)
- [Contents of Position Reports](#)
- [Pilot Weather Reports](#)
- [Adherence to ATC Approved Route](#)
- [Contingency Procedures](#)
- [Security](#)
- [Flight Plans](#)
- [Air Traffic Control Radar Beacon System](#)
- [VMC Flight \(VFR\) in Oceanic FIRs](#)



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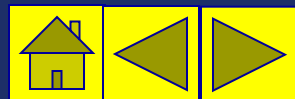


# Separation Standards

- Oceanic IFR Separation Standards
- Mach Number Technique
- RVSM Separation



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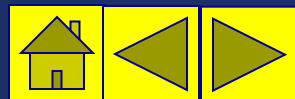


# Oceanic IFR Separation Standards

- **Longitudinal**
  - At least 15 minutes between aircraft on the same or crossing course
  - Longitudinal separation minima may be reduced in some cases by using Mach Number Technique (MNT)
- **Crossing: All aircraft at least 15 minutes**
- **Lateral**
  - At least 100 nautical miles between intended routes
  - Lateral separation minima may be reduced in some cases when suitable NAVAIDS are available and/or when RNP is authorized.
- **Vertical**
  - At least 1000 feet from the lower limit to FL290
  - Above FL290 at least 2,000 feet, except
    - Vertical separation may be reduced when Reduced Vertical Separation Minimum (RVSM) is authorized



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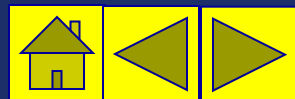


# Mach Number Technique (MNT)

- **Mach number technique allows for the application of reduced longitudinal separation minima and improved airspace utilization, and can be applied**
  - Between turbojet aircraft following the same or continuously diverging track, which have reported over a common point
  - Between aircraft that are assigned a single cardinal altitude or the aircraft concerned is in level, climbing or descending flight
- **Longitudinal separation using MNT is based on the aircraft maintaining the assigned Mach number at all times, including during climb and descent**
- **If it is not feasible, for operational reasons, to maintain the last assigned Mach number, the pilot shall advise ATC at the time of the initial clearance or subsequent climb/descent clearance**
- **Aircraft shall adhere to the Mach number assigned by ATC and shall obtain approval before making any change to the Mach number**
  - If it is essential to make an immediate change in Mach number (i.e. due to turbulence) ATC shall be notified as soon as possible that such a change has been made
- **Separation is applied in accordance with JO [7110.65](#), Paragraph 8-3-3**



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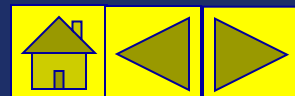
# Reduced Vertical Separation Minimum (RVSM)

- **1,000 ft vertical separation between RVSM approved aircraft may be applied within the Oceanic FIRs between FL290 and FL410**
- **Aircraft operating within this airspace between FL290 and FL390 require RVSM approval**
  - Operators shall determine that the appropriate state authority has approved the aircraft and the aircraft will meet RVSM requirements for the filed route of flight and any planned alternate routes
  - The letter “W” in Field 10 (equipment) of the ICAO standard flight plan indicates RVSM approved aircraft
- **ATC will consider suspending RVSM procedures within affected areas when there are pilot reports of greater than moderate turbulence**
  - Vertical separation minimum will revert to 2,000 ft between all aircraft

**NOTE:** See specific [RVSM Documentation](#)



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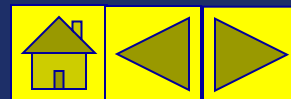


# Non-RVSM Approved Civil Aircraft

- **Non-RVSM civil aircraft unable to fly to an appropriate destination at or below FL280 and unable to fly at or above FL410 may flight plan at RVSM flight levels provided one of the following conditions exists**
  - The aircraft is being initially delivered to the State of registry or operator
  - The aircraft was formerly RVSM approved but has experienced an equipment failure and is being flown to a maintenance facility for repair in order to meet RVSM requirements and/or obtain approval
  - The aircraft is being utilized for mercy or humanitarian purposes
- **Aircraft operators are required to obtain advance approval in accordance with published [International NOTAMs](#)**
- **Aircraft operating within the Anchorage FIR should see [Exceptions](#)**



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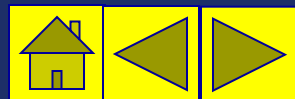


# Non-RVSM Approved State Aircraft

- **Non-RVSM State aircraft may flight plan within Oakland, Anchorage, or Tokyo oceanic airspace without prior coordination**
- **State aircraft should include the following phrase in Field 18 of the ICAO Flight Plan (remarks): “STS/Military NON-RVSM”**



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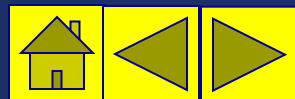


# NAV/COM Requirements

- Navigational Performance in Oceanic Areas
- Basic Oceanic Long-Range Navigation Requirements
- Basic Oceanic Long-Range Communication Requirements
- General Aviation Long-Range Navigation and Communication Requirements
- Contents of Position Reports
- Pilot Weather Reports



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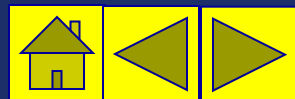


# Navigational Performance in Oceanic Areas

- In any ATC environment, there is a need to ensure that aircraft adhere to the centerline of the cleared route
- Demonstrated navigational accuracy provides the basis for determining lateral spacing and separation minima necessary with respect to traffic operating outside but adjacent to the airspace protected for a given route
- The best measurement for adherence is obtained by radar observation of each aircraft's proximity to centerline prior to its coming into coverage of short range NAVAIDS at the end of the oceanic navigated portion of flight
- If observation indicated that an aircraft was not reasonable within airspace normally protected, the reasons for the deviation must be determined and steps must be taken to prevent recurrence and to improve overall navigation performance

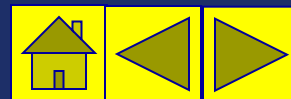


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# Navigational Performance in Oceanic Areas

- Where radar is available to monitor organized oceanic route systems, oceanic errors will be reported, investigated and reviewed to identify trends, training issues, and procedural problems in accordance with FAA Order [7110.82](#)
- Timely reporting of oceanic errors allows prompt corrective action
  - **Gross Navigation Errors** are lateral errors of 25 NM or more from the aircraft's cleared route
  - A **Height Error** is an error of 300 feet or more from a clearance altitude
  - A **Time Error** occurs when an aircraft's reported actual time of arrival is more than 3 minutes before or after the estimated time of arrival
    - For the North Atlantic (NAT) Region, the criteria is 3 minutes or more
  - **Special Area of Operations (SAO) verification** is not an error but is a request to verify that the operator has a current LOA, management specification (MSpec) or operations specification (OpSpec) for operation in the SAO

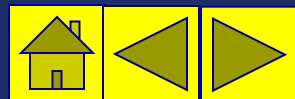


# Basic Oceanic Long-Range Navigation Requirements

- Any operation conducted in international airspace on an IFR flight plan, a VFR controlled flight plan, or at night, and is conducted beyond the published range of normal airways navigation facilities (NDB, VOR/DME), is considered to be a long range navigation operation
- Long range navigation in controlled airspace requires aircraft to be navigated within the degree of accuracy required for ATC, meaning that aircraft must make every effort to follow the centerline of the assigned route, to maintain assigned flight level filed or assigned speed



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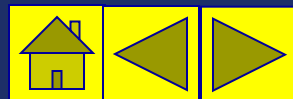


# Basic Oceanic Long-Range Navigation Requirements

- **Accurate navigational performance is necessary to support the separation minima applied by ATC**
  - These separation minima can be found in the ICAO Regional Supplementary Procedures (Doc 7030)
  - For flights conducted within international airspace under United States jurisdiction, FAA Order [7110.65](#), Chapter 8 provides a simplified version of these separation minima
- **Code of Federal Regulations (CFR) [91.1](#) and [91.703](#) govern aircraft operating under US civil certification in international oceanic airspace**
  - CFR [91.703](#) requires that civil aircraft must comply with ICAO Annex 2 when operating over the high seas



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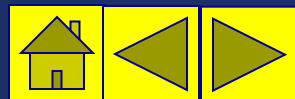


# Basic Oceanic Long-Range Navigation Requirements

- **Annex 2 requires that**
  - Aircraft shall be equipped with suitable instruments and with navigation equipment appropriate to the route being flown
  - Aircraft shall adhere to the current flight plan unless a request for change has been made and clearance obtained from the appropriate air traffic control unit
  - Unless otherwise authorized by the appropriate ATC unit, controlled flights shall, in so far as practicable:
    - When on an established ATS route, operate along the centerline of that route; or
    - When on any other route, operate directly between the navigation facilities and/or points defining that route.”



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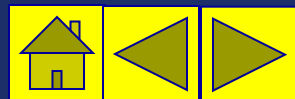


# Basic Oceanic Long-Range Navigation Requirements

- If a flight inadvertently deviates from an ATC cleared route, immediate action should be taken to rejoin the track as soon as possible
- When a deviation from track is discovered, ATC must be informed so that appropriate actions may be taken to resolve any potential hazards to other aircraft which may have been created by the deviation
- Any navigation error which results in an aircraft straying from the centerline of its cleared route and beyond its protected airspace could create a significant hazard, since the error could not normally be observed by ATC

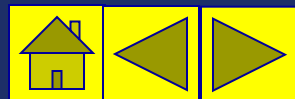


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# Basic Oceanic Long-Range Navigation Requirements

- **Use of Non-Directional Beacon (NDB) for Navigation**
  - The use of NDB as the “primary” source of navigation for long range oceanic flight presents the operator with limitations and restrictions that are inherent in low frequency radio equipment and low frequency signals, including the following:
    - NDB of the highest power (2000 watts or more), which are maintained and flight checked as suitable for navigation are limited in their usable service and/or reception range to no more than 75 NM from the facility at any flight level
    - Though the operator may be able to receive standard (AM/amplitude modulation) broadcast stations with NDB equipment, primary dependence on the facilities for air navigation is a questionable operating practice

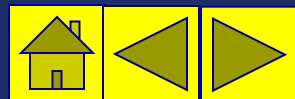


# Basic Oceanic Long-Range Navigation Requirements

- The following are some of the inherent problems associated with reception of NDB stations:
  - Infrequent identification of the station
  - Identification of foreign language stations may be impossible without some knowledge of the language
  - Transmitter sites are not always collocated with studio facilities
  - Termination of service without notice
  - Weather systems causing erratic and unreliable reception of signal
  - Atmospheric disturbance causing erratic and unreliable reception of signal
  - No flight checks conducted to verify the suitability and reliability of the facility and its signal for use in air navigation
  - Fluctuation (bending) of signal due to “shoreline/mountain” effect
  - Standard broadcast stations are not dedicated for air navigation purposes



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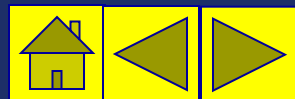


# Basic Oceanic Long-Range Navigation Requirements

- Considering the limitations, the operator should make every effort to navigate the aircraft so as to maintain the “track/course” and the “tolerances” specified in the ATC clearance as per Annex 2 and ICAO Doc 7030
  - An error of 10 degrees at a distance of 2000 miles equates to approximately 350 NM of course deviation
  - The inadequacies of the NDB as the sole source of navigation for oceanic flight must be evaluated carefully



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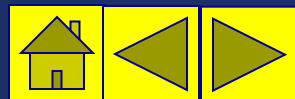


# Adherence to ATC Approved Route

- If an aircraft, notwithstanding all action taken to adhere to the route specified in the ATC clearance, inadvertently deviates from this route, action shall be taken to regain it as soon as reasonable and not further ahead than 200 nautical miles from the DR position at which the heading was altered to regain the route specified in the ATC clearance
- Action to regain this route shall not be delayed in anticipation of obtaining a requested re-clearance



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# Basic Oceanic Long-Range Communication Requirements

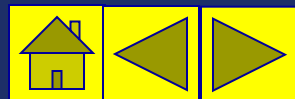
- **Use of VHF and HF Communications**

- Due to the inherent “line of sight” limitations of VHF radio equipment when used for communications in international oceanic airspace, those aircraft operating on an IFR or controlled VFR flight plan beyond the communications capability of VHF will be required as per ICAO Annex 2 to maintain a continuous listening watch and communications capability of the assigned HF frequencies
  - These frequencies are listed in Section IV of the Pacific Chart Supplement as part of the general purpose communication facilities operated by ARINC
  - SELCAL units or similar automatic signaling devices fulfill this requirement
- The ARINC communication facilities are responsible for the relay of position reports and other pertinent information between the aircraft and ATC

**NOTE:** Use of satellite telephones does not provide a “continuous listening watch” and therefore does not meet minimum ICAO standards



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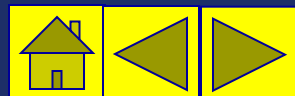


# Basic Oceanic Long-Range Communication Requirements

- **Guard of VHF Emergency Frequency**
  - ICAO Annex 10, Volume II, Paragraphs 5.2.2.1.1.1 and 5.2.2.1.1.2 requires pilots to continuously guard the VHF emergency frequency 121.5 MHz on long over-water flights, except when communications on other VHF channels, equipment limitations, or cockpit duties prevent simultaneous guarding of two channels
  - Guarding of 121.5 MHz is particularly critical when operating in proximity of FIR boundaries since it serves to facilitate communications with regard to aircraft which may experience in-flight emergencies, communications, or navigational difficulties



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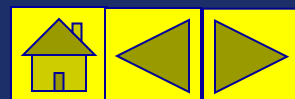


# General Aviation Long-Range Navigation and Communication Requirements

- **ICAO Annex 6, Part II contains standards and recommended practices adopted for the operation of general aviation aircraft engaged in international air navigation**
  - Stipulates that an airplane must be provided with navigation equipment which will enable it to:
    - Proceed in accordance with the flight plan, and in accordance with the requirements of air traffic services
    - Where a navigation specification for performance-based navigation has been prescribed, an airplane must also be provided with navigation equipment which will enable it to operate in accordance with the prescribed navigation specification, and be authorized by the State of Registry for such operations
  - Requires that airplanes operated in accordance with IFR or at night, or on a VFR controlled flight, must be provided with radio communication equipment capable of conducting two-way communication at any time during the flight with those aeronautical stations and on those frequencies prescribed by the appropriate authority

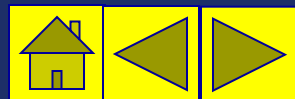


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# Contents of Position Reports

- **Position reports shall comprise information on present position, estimated next position, and ensuing position in sequence as indicated below**
- **Forward planned flight level change information while in the Oakland FIR**
- **PRESENT POSITION – Information shall include:**
  - The word “position”
  - Aircraft identification
  - Reporting point name, or if not named:
    - Latitude (2 digits or more) and,
    - Longitude (3 digits or more)
  - Time over reporting point (4 digits UTC)
  - Altitude (Flight Level). When forwarding and altitude report within the Oakland FIR, pilots should report their present altitude and their assigned altitude exactly as cleared if the present and assigned altitude differ. A restriction to cross a point at an altitude is not a block altitude assignment and should not be reported as a block of altitudes
- **ESTIMATED NEXT POSITION**
  - Reporting point name, or if not named, latitude and longitude as above, and
  - Estimated time over next position (4 digits UTC)
- **ENSUING FIX**
  - Name only of the next succeeding fix whether compulsory or not, or if not named, latitude and longitude as above
- **PREPLANNING FLIGHT LEVELS**
  - Within the Oakland FIR, pilots should forward the time requesting the next subsequent cardinal flight level



# Pilot Weather Reports

- **Weather reports shall be included in position reports by all flights unless exempted from weather reporting by the Weather Service and/or ATC**
- **Pilots are urged to cooperate and promptly volunteer pilot reports (PIREPs) of the following weather conditions**
  - Ceilings at or below 5,000 feet
  - Visibility at or below 5 miles (surface or aloft)
  - Thunderstorms and related phenomena
  - Icing of a light degree or greater
  - Turbulence of a moderate degree or greater
  - Wind shear
  - Reported or forecast volcanic ash clouds
  - Other atmospheric data, such as cloud bases, tops and layers, flight visibility, precipitation, visibility restrictions (haze, smoke, and dust), wind at altitude, and temperature aloft
- **Although the PIREP should be as complete and concise as possible, pilots should not be overly concerned with strict format or phraseology**



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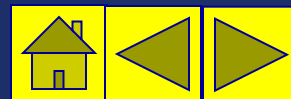


# Contingency Procedures

- Special Procedures for In-Flight Contingencies in Oceanic Airspace
- Weather Deviation Procedures
- Refer to Notices to Airmen, Domestic/International, Part 3, Section 2 and ICAO Doc 4444, Section 15.2.2



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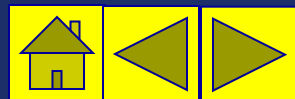


# Contingency Procedures

- **Although all possible contingencies cannot be covered, these procedures provide for the more frequent cases, such as**
  - Inability to maintain assigned flight level due to meteorological conditions, aircraft performance or pressurization failure
  - En route diversion across the prevailing traffic flow
  - Loss of, or significant reduction in the required navigation capability when operating in airspace where the navigation performance accuracy is a prerequisite to the safe conduct of flight operations
- **These procedures are applicable primarily when rapid descent and/or turn-back or diversion is required**
- **The pilot's judgment shall determine the sequence of actions to be taken, having regard to the prevailing circumstances**
- **ATC shall render all possible assistance**



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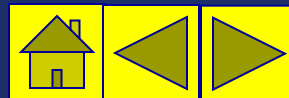


# Contingency Procedures

- If an aircraft is unable to continue the flight in accordance with its ATC clearance, and/or an aircraft is unable to maintain the navigation performance accuracy specified for the airspace, a revised clearance shall be obtained, whenever possible, prior to initiating any action
- The radiotelephony distress signal (MAYDAY) or urgency signal (PAN PAN) preferably spoken three times shall be used as appropriate
- Subsequent ATC action with respect to that aircraft shall be based on the intentions of the pilot and the overall air traffic situation



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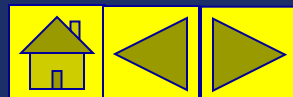


# Obtaining Priority From ATC When Weather Deviation is Required

- When the pilot initiates communications with ATC, rapid response may be obtained by stating “WEATHER DEVIATION REQUIRED” to indicate that priority is desired on the frequency and for ATC response
- The pilot retains the option of initiating the communications using the urgency call “PAN PAN” (*preferably spoken three times*) to alert all listening parties to a special handling condition which will receive ATC priority for issuance of a clearance or assistance

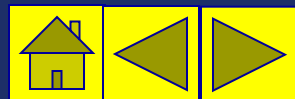


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# Weather Deviation Procedures for Oceanic Operations

- Refer to [Notices to Airmen, Domestic/International](#), Part 3, Section 2
- Once the pilot notifies ATC and requests clearance to deviate from track, advising, when possible, the extent of the deviation expected, ATC will take one of the following actions:
  - If there is no conflicting traffic in the horizontal dimension, ATC separates aircraft by establishing vertical separation and issue clearance to deviate from track
  - If there is conflicting traffic in the horizontal dimension and ATC is unable to establish vertical separation, ATC shall:
    - Advise the pilot unable to issue clearance for requested deviation.
    - Advise pilot of conflicting traffic, and if possible suggest a course of action.
    - ATC may suggest that the pilot climb or descend to a contingency altitude.
- **PHRASEOLOGY**
  - *“Standard separation not available, suggest climb (or descend) to (appropriate altitude): traffic (position and altitude); report deviation complete.”*



# Weather Deviation Procedures for Oceanic Operations

- **If the aircraft is required to deviate from track to avoid weather and prior clearance cannot be obtained, the pilot will take the following actions:**
  - Advise ATC of intentions by the most expeditious means available
  - Comply with air traffic control clearance issued: or
  - Execute the procedures detailed in the next two slides. (ATC will issue essential traffic information to all affected aircraft).
  - If necessary, establish voice communications with ATC to expedite dialogue on the situation



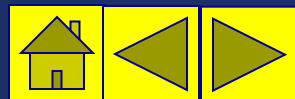
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# Actions to be Taken if a Revised Air Traffic Control Clearance cannot be Obtained

- **If a revised air traffic control clearance cannot be obtained and deviation from track is required to avoid weather, the pilot shall take the following actions:**
  - If possible, deviate away from an organized track or route system
  - Establish communication with and alert nearby aircraft by broadcasting, at suitable intervals: flight identification, flight level, aircraft position (including the ATS route designator or the track code), and intentions (including the magnitude of the deviation expected) on the frequency in use, as well as on frequency 121.5 MHz (or, as a back-up, the VHF inter-pilot air-to-air-frequency 123.45)
  - Watch for conflicting traffic both visually and by reference to ACAS (if equipped)
  - Turn on all aircraft exterior lights (commensurate with appropriate operating limitations)

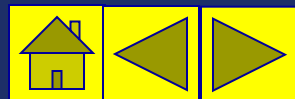


# Actions to be Taken if a Revised Air Traffic Control Clearance cannot be Obtained

- For deviations of less than 10 NM, aircraft should remain at the level assigned by ATC
- For deviations of greater than 10 NM, when the aircraft is approximately 10 NM from track, initiate a level change based on the criteria in the table below

Route Center Line Track	Deviations >10 NM	Level Change
EAST (000-179 magnetic)	LEFT RIGHT	DESCEND 300 ft. CLIMB 300 ft.
WEST (180-359 magnetic)	LEFT RIGHT	CLIMB 300 ft. DESCEND 300 ft.

- If contact was not established prior to deviating, continue to attempt to contact ATC to obtain a clearance
- If contact was established, continue to keep ATC advised of intentions and obtain essential traffic information
- When returning to track, resume assigned flight level when the aircraft is within approximately 10 NM of centerline

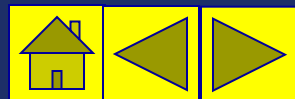


# Security

- Emergency Security Control of Air Traffic (ESCAT) Plan
- National Security



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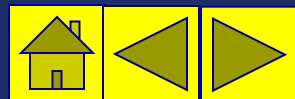


# Emergency Security Control of Air Traffic (ESCAT) Plan

- The [ESCAT Plan](#) is an emergency preparedness plan that prescribes the joint action to be taken by appropriate elements of the DOD, the DOT and the DHS in the interests of national security to control air traffic under emergency conditions
- The plan applies to all U.S. territorial airspace and other airspace over which the FAA has air traffic control jurisdiction by international agreement
- The ESCAT Plan provides that, in the defense of the United States during defense emergencies, the military will direct actions to be taken in regard to landing, grounding, diversion or dispersal of aircraft, and in regard to the control of air navigation aids



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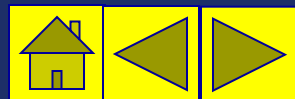


# Emergency Security Control of Air Traffic (ESCAT) Plan

- **At the time that ESCAT is implemented, ATC facilities will broadcast instructions received from the military over available ATC frequencies**
  - Depending on instructions received from the military, VFR flights may be directed to land at the nearest available airport
  - IFR flights will be expected to proceed as directed by ATC
  - Pilots on the ground may be required to file a flight plan and obtain approval (through FAA) before conducting flight operations
- **In view of the above, all pilots should guard an ATC or Flight Service Station frequency at all times while conducting flight operations**



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# National Security

- All aircraft entering domestic U.S. airspace from points outside must provide for identification prior to entry
- Procedures for operating into or out of the US through the ADIZ are governed by Title 14 of the U.S. Code of Federal Regulations, [Part 99](#)
- To facilitate early aircraft identification of all aircraft in the vicinity of U.S./international airspace boundaries, Air Defense Identification Zones (ADIZ) have been established
  - US ADIZ and designated mountainous areas: See US [AIP](#), FIG ENR 1.12-1
  - [Alaska ADIZ](#)
  - [Guam ADIZ](#)
  - [Hawaiian ADIZ](#)

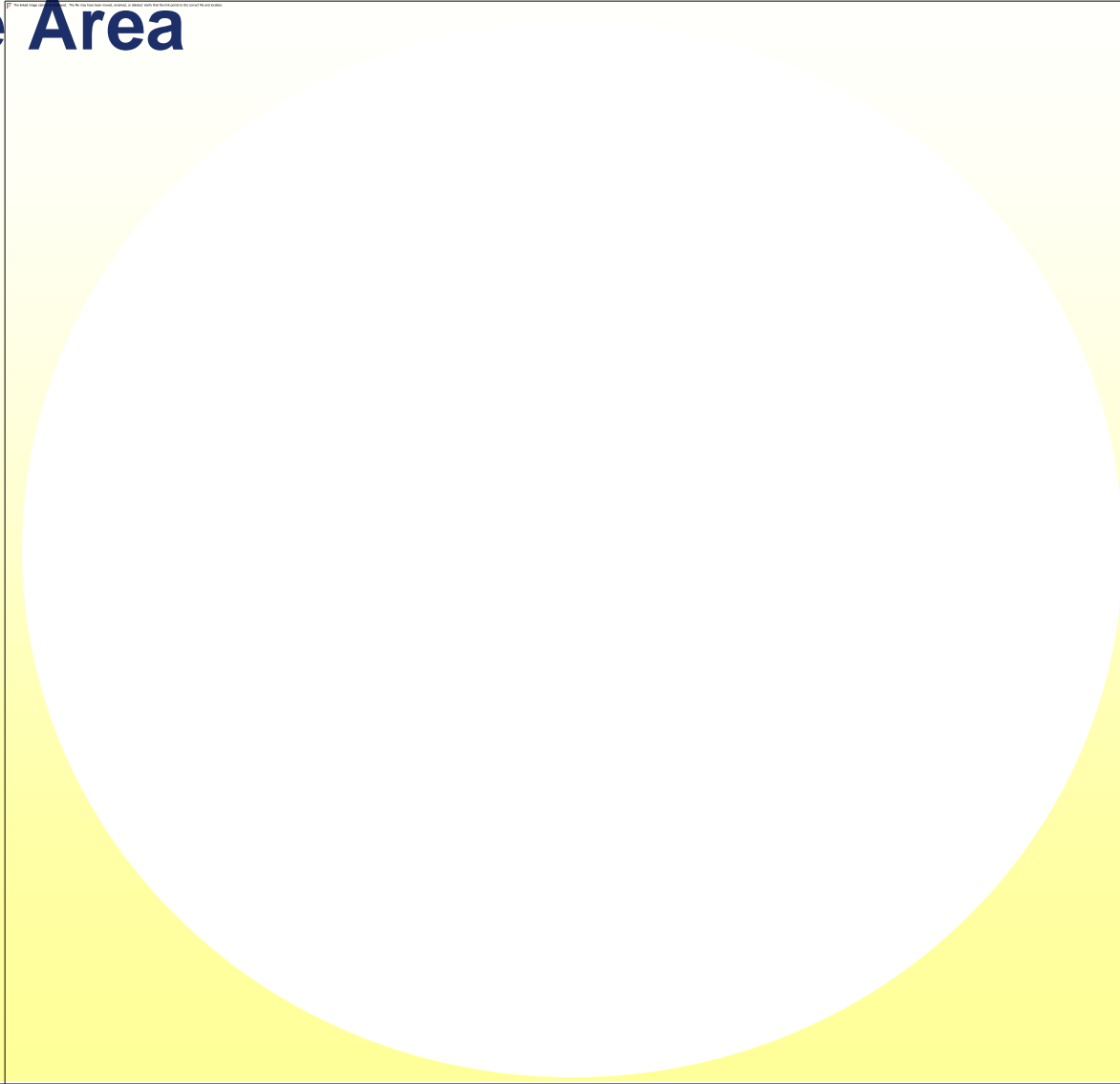


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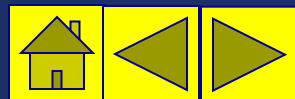




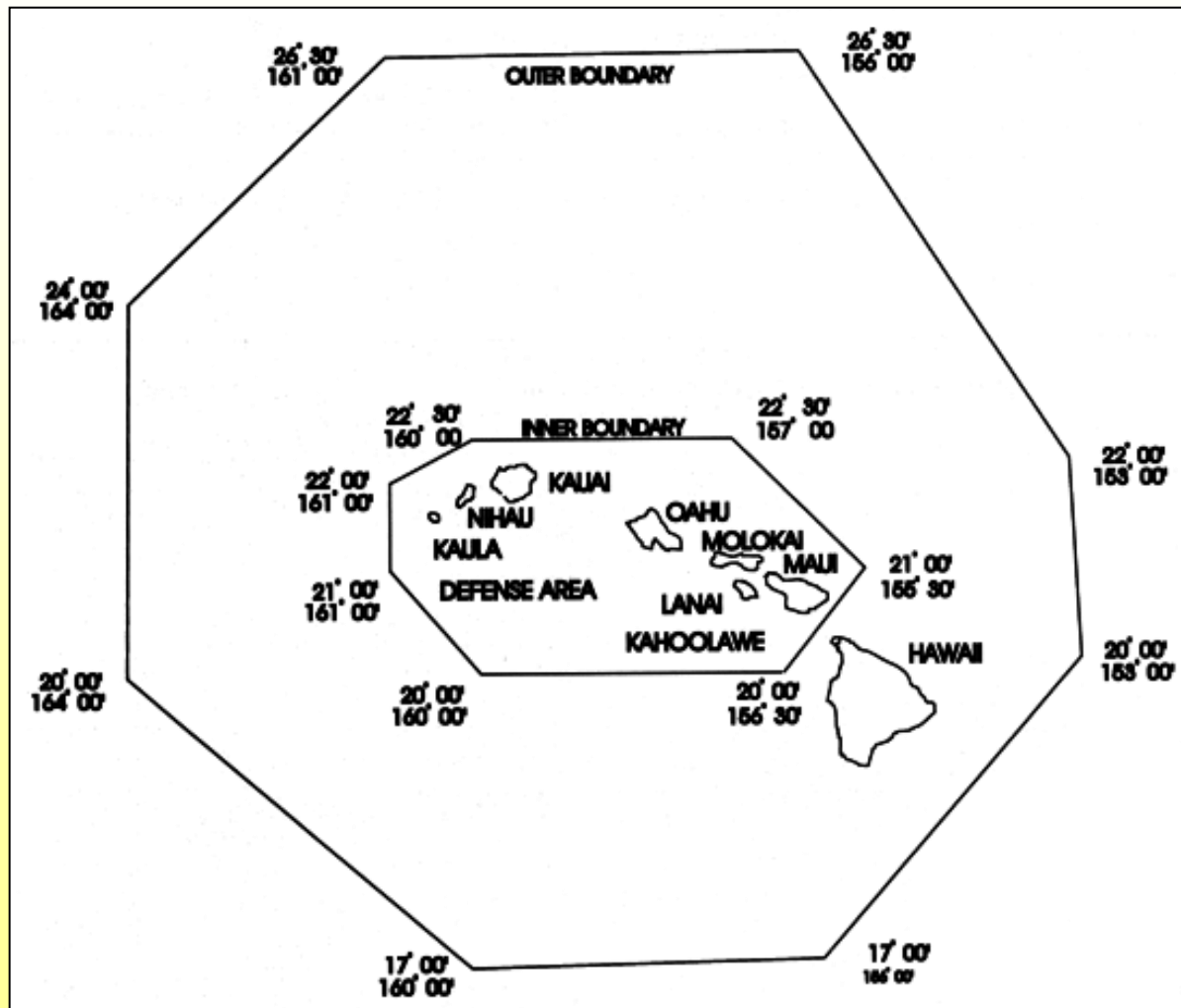
# Guam Air Defense Identification Zone and Defense Area



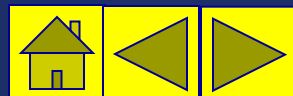
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# Hawaiian Air Defense Identification Zone and Defense Area



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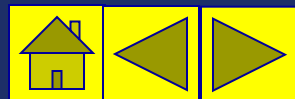


# Flight Plans

- **ICAO Annex 2 requires a flight plan to be submitted for any flight across international borders**
  - This permits en route stations and the destination station to render better service by having prior knowledge of flights
  - Aircraft on VFR flight plans must make regular position reports to ATC for flight following, for weather safety advisories, and for prompt search and rescue action in the proper area, if necessary
  - Flight plans may be submitted to the nearest flight service station either in person or by telephone
  - Aircraft radio may be used if no other means are available
  - If a flight service station cannot be reached, ARINC will accept flight plans by radio
- **Due to the critical workload in the processing of flight data and the increased time in transit due to the volume of messages, it is strongly recommended that ICAO flight plan messages be filed and transmitted to the appropriate ACC not less than one hour before estimated time of departure**



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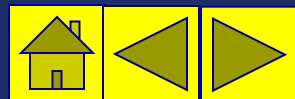


# Flight Plans

- **All operators are requested to include the following data in the route definition portion of flight plans:**
  - Coordinates for all turning points
  - Names, where applicable, or coordinates of points associated with transition from oceanic areas to airways/areas where national procedures apply
  - Names of airways or descriptions of routes within such national airspace
  - Coordinates for each 10 degrees of latitude or longitude depending on the predominant direction of flight unless this point generally coincides with a turning point or named intersection



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# Flight Plans

- Filing Mach Number in Flight Plan
  - For oceanic departures, Mach speed and flight level should be specified in the flight plan in one of the following ways
  - Preferred method: Mach number and flight level immediately preceding the initial domestic portion of the route of flight

Example of Field 15 of ICAO Flight Plan for Honolulu to San Francisco:

M084F340    MOLOKAI 3    CLUTS    R465    CLUKK/N0490F360    OSI

- Alternate Method: True airspeed and flight level in field 15, and Mach number in the remarks section, Field 18, of ICAO Flight Plan

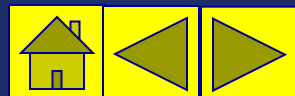
Example of Field 15 and Field 18 of ICAO flight plan for Honolulu to San Francisco:

N0480F340    MOLOKAI 3    CLUTS    R465    CLUKK/N0490F360    OSI  
M084    REG/N123XX    SEL/ABCD    EET/KZAK0043    KZAK0415

**NOTE:** See also [Filing an EET in Flight Plan](#)



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# Air Traffic Control Radar Beacon System (ATCRBS)

- **ATCRBS is similar to and compatible with military coded radar beacon equipment**
  - Civil Mode A is identical to military Mode 3
- **The Radar Beacon Code Employment Plan is designed to minimize the number of code changes and to enable a controller to display and quickly identify only those Mode 3/A Responses from aircraft operating within his area of jurisdiction**
- **Accordingly, pilots of aircraft equipped with a functioning coded radar beacon transponder, and operating on an IFR flight plan in an area covered by radar, will be instructed by ATC to reply on the appropriate code**
- **Flights assigned a particular code by ATC are expected to remain on that code until further advised by ATC**
  - See also [Beacon Code Requirements](#)

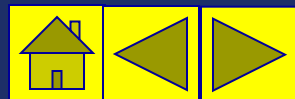


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# Air Traffic Control Radar Beacon System (ATCRBS)

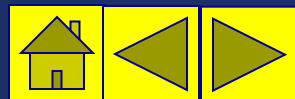
- Within the Honolulu domestic area and the Guam ADIZ, pilots of aircraft equipped with functioning coded radar beacon transponder will adjust their transponders to reply on Mode 3/A Codes specified below, unless a different code has been assigned by advance coordination or via direct communication with ATC
- If possible, coordination shall be effected with the appropriate ATC facility when special military operations preclude compliance with the requirement
  - Code 4000 – For all operations within restricted/warning areas
  - Code 1200 – For all VFR operations not being provided radar services by ATC facilities





# Air Traffic Control Radar Beacon System (ATCRBS)

- **Should the pilot of an aircraft equipped with a coded radar beacon transponder experience a loss of two-way radio capability the pilot should**
  - Adjust the transponder to reply on Mode 3/A, Code 7700 for a period of 1 minute
  - Then change to Code 7600 and remain on 7600 for period of 15 minutes or the remainder of flight, whichever occurs first
  - Repeat steps above, as practicable
- **The pilot should understand that the aircraft may not be in an area of radar coverage**
  - Many radar facilities are not presently equipped to automatically display Code 7600 and will interrogate 7600 only when the aircraft is under direct radar control at the time of the radio failure
  - Replying on Code 7700 first increases the probability of early detection of a radio failure condition

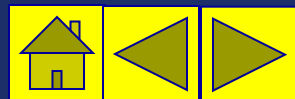


# Beacon Code Requirements

- **Within oceanic airspace outside of radar coverage, aircraft should set transponders to code 2000 unless otherwise directed by air traffic control**
  - See FAA Order [7110.66](#), Appendix 1, for more information



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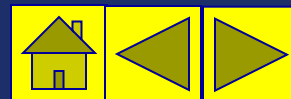
# VMC Flight (VFR) in Oceanic FIRs

- VFR flights in Oceanic FIRs may be conducted in meteorological conditions equal to or greater than those specified in [14 CFR Section 91.155](#), Basic VFR Weather Minimums
- Operations on a VFR flight plan are permitted between sunrise and sunset as follows:
  - Miami, Houston, and San Juan oceanic control areas (OCA), at or below FL 180
  - New York OCA, at or below FL 050, except in the airspace east of 60 degrees west at or below FL 190
  - Oakland and Anchorage OCA's, at or below FL 050
- Operations on a VFR flight plan are permitted in offshore airspace (between the U.S. 12-mile limit and the OCA/FIR boundary) as follows:
  - Only between sunrise and sunset
  - At or below FL 200

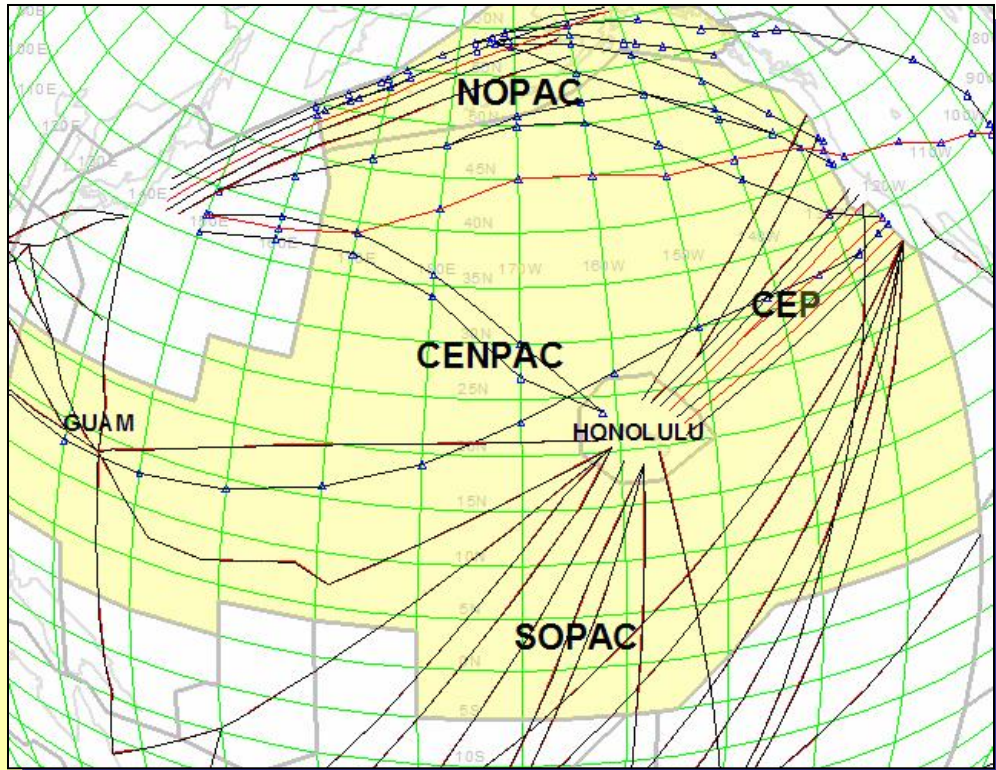
**NOTE:** See [FAA Advisory Circular 91-70](#), Chapter 2, paragraph 6.b. for more information; see also [VMC Flight \(VFR\) in the Oakland FIR](#)



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# Pacific Operations

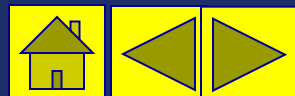


- [Separation between RNP 10 Approved Aircraft](#)
- [Composite Separation](#)
- [VMC Flight \(VFR\) in Oakland FIR](#)
- [Central East Pacific \(CEP\)](#)
- [North Pacific \(NOPAC\) Route System](#)
- [Random Flight Plans](#)
- [Pacific Organized Track System \(PACOTS\)](#)
- [Strategic Lateral Offset Procedures](#)
- [CPDLC Procedures for Honolulu and Guam](#)
- [Guam Area Preferential Routing](#)
- [Marshall Islands](#)
- [International Pilot Weather Briefing Test](#)
- [Oakland Oceanic FIR](#)
- [Anchorage FIR](#)
- [Pacific Oceanic Working Groups](#)

**NOTE:** Please see FAA Notices to Airmen ([NOTAM](#)) for the most current and accurate information. Basic international flight information and ATC procedures can be found in the United States Aeronautical Information Publication ([AIP](#))



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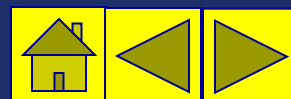
# Separation between RNP 10 Authorized Aircraft

- **Operators are required to obtain an approval by State of registry or State of operator, as appropriate, to be qualified as RNP 10**
  - RNP 10 approval criteria can be found in FAA Order [8400.12](#)
- **A minimum of 50 NM lateral separation will be applied within the Oakland and Anchorage Oceanic FIRs between all aircraft that are RNP 10 approved**
  - All RNP 10 approved aircraft shall file an “/R” equipment suffix in their ICAO flight plan in accordance with ICAO Doc 4444, Appendix 2, provided they will maintain RNP-10 eligibility for the entire route segment within the oceanic FIR
- **Non RNP 10 approved aircraft may file via random tracks, at any altitude, at least 100 NM from any PACOTS track or the NOPAC**
- **RNP-10 approval is required for PACOTS 1, 2, 3, 4, 8, 14, 15, C, D, E, F, G, H, I, J, K, L, and M and for all aircraft operating within the CEP at FL290 through FL390**
  - Non-RNP approved aircraft can expect FL270 and below or FL430 and above, traffic permitting

**NOTE:** See also [Pacific Comm/Nav/Surveillance \(CNS\) Requirements/Options](#)

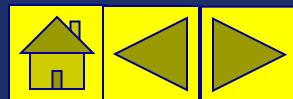


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# Composite Separation

- **Composite separation may be provided within the Central East Pacific (CEP) and North Pacific (NOPAC) composite route systems and where designated by facility directive in the Pacific Organized Track System (PACOTS) at and above FL 290 as follows:**
  - 1,000 feet vertical separation; and
  - 50 NM lateral separation

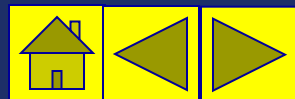


# Composite Separation

- **Aircraft operating at or above FL 300 leaving a composite route system at an even cardinal flight level do not have to be assigned an odd cardinal flight level provided:**
  - The aircraft is being provided radar service; and
  - The aircraft will be cleared for descent and approach to an airport within the facility's domestic FIR; and
  - There is an operational advantage
- **Aircraft operating on unidirectional routes or traffic flows may be assigned altitudes other than the appropriate altitude for direction of flight provided that 2,000 feet vertical separation is maintained between aircraft operating on the same route**



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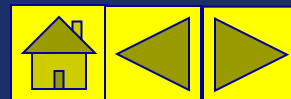
# VMC Flight (VFR) in Oakland FIR

- **The Oakland Oceanic FIR/OCA, unless otherwise specified, is classified as class A airspace above FL055 (IFR only)**
- **VMC flights are not authorized in class A airspace but may operate within the Oakland Oceanic FIR as follows:**
  - At or below FL055 (class G)
  - VMC procedures are authorized in class D and E airspace
- **VFR flights may be conducted in the airspace surrounding Pacific islands located within the Oakland Oceanic FIR/OCA with the following restrictions:**
  - Between sunrise and sunset; and
  - When operating less than 100 nautical miles of shoreline of any landmass; and
  - Below FL200

**NOTE:** VMC Flights operating within 100 NM of landfall are not considered to be “over water” flights



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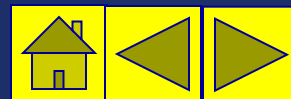




# VMC Flight (VFR) in Oakland FIR

- **All “over water” VMC flights planning to operate outside of controlled airspace (Class G) but on routes within the Oakland FIR are required for national security to submit an ICAO flight plan with Flight Service (FSS)**
  - The flight plan shall contain reporting points along the route not more than 80 minutes apart
  - It is the VMC pilots’ responsibility to open and close their VMC flight plan with FSS
- **All over water VMC flights are required to maintain a continuous listening watch on the appropriate frequency, and make position reports not more than 80 minutes apart on the appropriate HF frequencies**

NOTE: SATPHONES do not meet the “continuous listening watch” requirements as prescribed by ICAO.
- **Flight following and alerting services are provided by ATC for all over water flights**
- **State aircraft (military, customs etc.) may operate VFR in the Oakland Oceanic FIR if exercising “Due regard”**

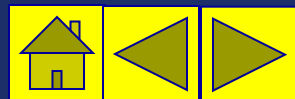


# Central East Pacific (CEP)

- **The CEP is the organized route system between Hawaii and California**
  - Seven ATS routes, R463, R464, R465, R585, R576, R577, R578 and associated transition waypoints are within the CEP
  - RVSM and RNP 10 approvals are required for aircraft operating within the CEP at FL290 through FL390
  - Non-approved aircraft can expect FL280 and below, or FL400 and above, traffic permitting
- **RNP 10 approval is required for PACOTS 1, 2, 3, 4, 8,14,15, C, D, E, F, G, H, I, J, K, L, M and for aircraft operating within the CEP at FL290 through FL390**
  - Non approved aircraft can expect FL270 and below, traffic permitting, unless prohibited by NOTAM
- **Applicable ATC procedures can be found in**
  - FAA Orders [7110.65](#)
  - FAA Order [8400.12](#)
  - ICAO Doc 7030 – PAC
  - Annex 2, Appendix 3
  - ICAO Doc 9574

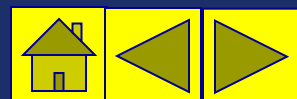


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# North Pacific Route System (NOPAC) General Information

- **The NOPAC Route System is comprised of five ATS routes which transit the North Pacific between Alaska and Japan**
  - The two northern routes are used for westbound traffic
  - The three southern routes are used primarily for eastbound traffic except that R591 or G344 may be used for westbound aircraft crossing the Tokyo/Anchorage FIR boundary between 0000Z and 0600Z
- **NOPAC traffic flows are predictable due to consumer demand, time zone differences and winds aloft**
  - Eastbound air traffic is heavy between 0700 UTC and 2100 UTC
  - Westbound air traffic is heavy between 1200 UTC and 1900 UTC, and between 2200 UTC and 0700 UTC



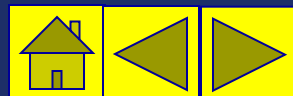
# North Pacific Route System (NOPAC) General Information

- When the NOPAC Route System is selected as the preferred routing due to winds aloft, route saturation can occur. The most critical altitudes are flight levels 310 through 390. The lack of available preferred altitudes may necessitate destination decisions due to the vast route lengths involved.
- Within the Tokyo FIR, Oceanic Transition Routes (OTRs) and, in one case, a Victor route, have been established for aircraft transitioning to or from the NOPAC Route System
- Within the Anchorage FIR, certain ATS routes are used for the same purpose

**NOTE:** Specific procedures and route descriptions for the NOPAC can be found in the US Government Flight Information Publication, [Alaska Supplement](#) and at [NOPAC Route Information](#)



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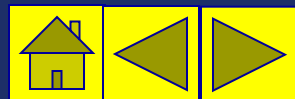


# Random Flight Plans

- **All operators are requested to include the following data in the route definition portion of random flight plans involving flight in the Pacific FIRs under the jurisdiction of the US Federal Aviation Administration**
  - Coordinates of all turning points
  - Names, where applicable, or coordinates of points associated with transition from oceanic control areas to airways or areas where national procedures apply
  - Names of airways or descriptions of routes within such national airspace
  - Coordinates at each 5 or 10 degrees of latitude, or for each 5 or 10 degrees of longitude, depending on the predominant direction of flight
    - 10 degree increments should only be used when the speed of the aircraft is such at 10 degrees will be traversed within 1 hour 20 minutes



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# PACOTS General Information

- **Usable Flight Levels**

- All IFR flight levels at or above FL290, except the westbound North America-Japan PACOTS which also include FL280 in the Oakland Oceanic FIR
- Westbound North America-Japan PACOTS are included in the Track Advisory Program
- Certain restrictions may apply for non-PACOTS traffic operating in the opposite direction to the published PACOTS system

- **City Pair Tracks**

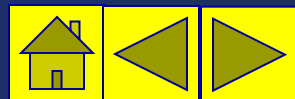
- Where ATC has identified a requirement for flight planning restrictions on a particular city pair, these restrictions will be published by Class 1 NOTAM or as part of the daily track message
- Users crossing 165 east longitude between 0930-1230 UTC will file eastbound PACOTS Track 2 (or 4 when published) to KSFO and Track 3 (or 4 when published) to KLAX
- Users will file westbound PACOTS Track J for departures from KSFO and PACOTS Track K for departures from KLAX

- **Lateral Spacing of Tracks**

- PACOTS Tracks are established at least 50 OR 100 NM apart based on separation being applied.
- Tracks are defined using latitude/longitude expressed in whole degrees or named fixes with the exception of FIR crossing points



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# Numbers and Designators of PACOTS Tracks

**Oakland ARTCC or Japan Air Traffic Flow Management (ATFMC) may develop more or fewer tracks according to user needs, military activity, significant weather, or other limitations**

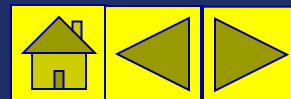
## ROUTES

## TRACK DESIGNATORS

(1) Hawaii to Japan _____	A & B
(2) Japan to Hawaii _____	11 & 12
(3) North America to Japan _____	C, D, E, F & G
(4) Japan to North America _____	1, 2, 3, & 4
(5) California to Australia/New Zealand _____	W & X
(6) California to Australia/New Zealand (DARP) _____	Y, Z
(7) Australia/New Zealand to California _____	20 & 21
(8) Dallas Ft. Worth to Japan _____	M
(9) Japan to Dallas Ft. Worth _____	8
(10) North America to Hong Kong/Taipei _____	H, I, J & K
(11) North America to Manila _____	L
(12) Hong Kong/Taipei to San Francisco _____	14
(13) Hong Kong/Taipei to Los Angeles _____	15



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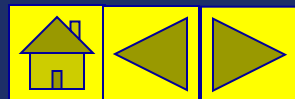


# Pacific Organized Track System (PACOTS) Guidelines

- **Geographical Boundary**
  - PACOTS tracks may be established within the Oakland, Tokyo, Naha, Manila, Anchorage, Tahiti, Auckland, Nadi, Port Moresby, and Brisbane FIRs
- **Track Definition Message (TDM)**
  - Oakland ARTCC is using the TDM format for PACOTS tracks
  - Questions regarding published PACOTS tracks should be directed to Oakland ARTCC Traffic Management Unit (TMU) at (510) 745-3771



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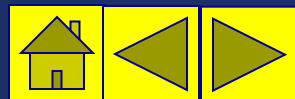


# PACOTS Flight Planning

- The following flight planning restrictions and rules only apply within the oceanic control areas of the respective FIRs
  - These restrictions do not affect aircraft filing on ATS routes in the CEP route system or the NOPAC Composite Route System unless individual routes within these systems are specifically identified by NOTAM as unusable
  - Participating Aircraft
    - Aircraft requesting altitudes at or above FL280 may file via route notified in the daily NOTAM or track message
    - Aircraft may file to leave or join an outer PACOTS track at any reporting point. Aircraft leaving an outer track should file routes that diverge, within 10 degrees of longitude, to at least 50NM from the nearest PACOTS track.
    - Flight level assignment for aircraft joining an outer track will be based on traffic
  - Non-Participating Aircraft.
    - Random routes under the PACOTS at FL270 and below are permitted, unless prohibited by NOTAM



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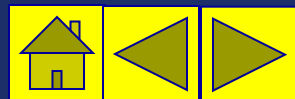


# PACOTS ATC Procedures

- **For flight planning and initial clearances, crossing between PACOTS tracks at FL280 and above will not be permitted**
  - Once established on the PACOTS track, changes may be approved as traffic permits
- **Aircraft should not expect to climb into the PACOTS unless filed on a route corresponding to a PACOTS track**
  - In this case, climb into the PACOTS will be approved as traffic permits
- **The minimum longitudinal separation between aircraft crossing the Tokyo FIR boundary on the same track at the same flight level will be 10 minutes using Mach Number Technique**



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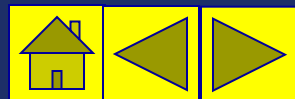


# PACOTS Position Reporting

- **Made in accordance with ICAO Doc 7030/PAC procedures**
- **Within the Oakland and Anchorage Oceanic CTAs position reports are to be made using latitude/longitude coordinates or named fixes as specified in the PACOTS Track/NOTAM message**



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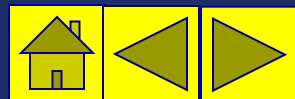


# Eastbound Japan-Hawaii PACOTS

- **Time Frame**
  - Effective daily 1000-2100 UTC for aircraft crossing 160 east longitude between 1200 and 1600 UTC
- **Notification of Japan-Hawaii PACOTS**
  - Notification of the geographical coordinates of Track 11 and Track 12 will be transmitted by TDM and NOTAM at approximately 0200 UTC daily by Japan Air Traffic Flow Management (ATFMC)
- **Flight Planning**
  - Participating eastbound aircraft departing from or traversing Central West Japan and crossing 160 east longitude between 1200 UTC to 1600 UTC should flight plan as described in the daily TDM and NOTAM.



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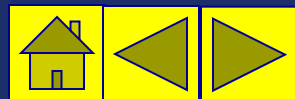
# Eastbound Japan-Hawaii PACOTS

- **Preparation of Japan-Hawaii PACOTS**

- Japan Air Traffic Flow Management Center (ATFMC) will complete preparation of the selected PACOTS tracks at or before 0400 UTC daily
- The ATFMC will coordinate the tracks with Oakland ARTCC
- The Japan-Hawaii PACOTS will be comprised of one or two tracks
  - When two tracks are used, they will be separated by at least 100 NM laterally within the airspace between the Tokyo and Honolulu gateways
  - The North track will be designated as Track 11 and the South track as Track 12
  - In some instances, a single track may be required, which will be designated as Track 11.
- When military airspace is active, the North track will include a restriction requiring aircraft to cross a designated fix, at or before a specified time to allow aircraft to clear the military airspace before activation



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# Westbound Hawaii-Japan PACOTS

- **Time Frame**
  - Effective daily 1900-0800 UTC for aircraft crossing 160 east longitude between 2300 and 0600 UTC
- **Notification of the Hawaii-Japan PACOTS**
  - Notification of the geographical coordinates of the selected PACOTS tracks will be transmitted by TDM and NOTAM at approximately 1100 UTC by Oakland ARTCC
- **Flight Planning**
  - Participating westbound aircraft departing Hawaii to Japan and crossing 160 east longitude between 2300 UTC and 0600 UTC should flight plan as described in the daily TDM and NOTAM
- **Preparation of the Hawaii-Japan PACOTS**
  - Preparation of the geographical coordinates of the Hawaii-Japan selected PACOTS tracks will be made daily by Oakland ARTCC
  - Normally, two tracks will be developed
    - The northernmost PACOTS track is designated “A” and the southernmost PACOTS track is designated “B”
  - A third weather avoidance track may be developed if necessary



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# Eastbound Japan-North America PACOTS

- **Time Frame**

- Effective daily from 0700 UTC to 2300 UTC for traffic crossing 160 east longitude between 0900 UTC and 1600 UTC

- **Notification of the Japan-North America PACOTS**

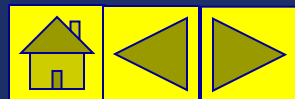
- Notification of the geographical coordinates of the selected PACOTS tracks will be transmitted by TDM and NOTAM at approximately 2200 UTC daily by Japan Air Traffic Flow Management Center (AFTMC)
- Tracks will be designated by number with the northernmost being referred to as Track 1

- **Flight Planning**

- Participating aircraft from or over Japan to North America and crossing 160 east longitude between 0900 UTC and 1600 UTC should flight plan as follows
  - As described in the daily TDM and NOTAM
  - Portions of G344 and R591 may be included as a PACOTS track
  - When operating on G344 and R591 NOPAC procedures apply



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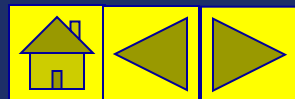


# Eastbound Japan-North America PACOTS

- **Preparation of Japan-North America PACOTS**
  - Preparation of selected PACOTS Tracks will be completed daily by Japan ATFM
  - Normally two tracks from Japan to California and one track from Japan to the Pacific Northwest will be developed



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# Westbound North America-Japan PACOTS

- **Time Frame**

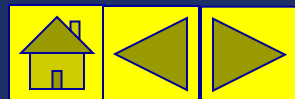
- Effective daily from 1900 UTC to 0800 UTC
- Required for traffic crossing 160 east longitude between 0200 UTC and 0600 UTC
- The Westbound TDM or NOTAM identifies tracks subject to Track Advisory procedures for aircraft entering the tracks between 1900 UTC and 0100 UTC
- Aircraft participating in [Track Advisory procedures](#) receive priority over nonparticipating aircraft

- **Notification of Tracks**

- Notification of selected PACOTS tracks will be transmitted by TDM and NOTAM at approximately 1100 UTC daily by Oakland ARTCC
- The number of tracks each day will be determined by the position of the jet stream



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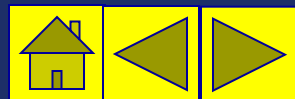
# Westbound North America-Japan PACOTS

- **Flight Planning**

- Participating aircraft flying from North America to the Tokyo FIR and crossing 160 east longitude between 0200 UTC and 0600 UTC should flight plan as follows
  - As described in the daily TDM and NOTAM
  - Aircraft using NOPAC Routes R591 and G344 should comply with the applicable time restrictions as follows
    - R591 cross AKISU at or before 0600 UTC
    - G344 cross CUTEE at or before 0600 UTC
  - Aircraft may request revised NOPAC routing from Anchorage Center once established within their radar/VHF coverage area



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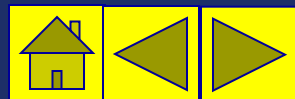
# Westbound North America-Japan PACOTS

- **Preparation of Westbound PACOTS Routes**

- Preparation of selected PACOTS will be completed daily by Oakland ARTCC
- Normally two tracks from California and one or two tracks from the Pacific Northwest into the Tokyo FIR will be developed
  - Tracks are to be designated alphabetically with the letters “C” and “D” designating the tracks from the Pacific Northwest
  - The tracks from California will be designated “E”, “F” and “G”



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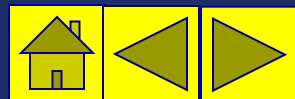


# California - Australia/New Zealand PACOTS

- **Time Frame**
  - As indicated in the daily track message
- **Notification of Tracks**
  - Notification of selected PACOTS tracks will be transmitted by track message before 0000 UTC daily by Oakland ARTCC
- **Flight Planning**
  - Participating aircraft flying both directions between KLAX and the South Pacific and crossing 160 west longitude between 0700 UTC and 1800 UTC should flight plan as described in the TDM and NOTAM

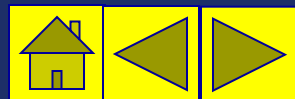


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# California - Australia/New Zealand PACOTS

- **Preparation of California-Australia/New Zealand PACOTS Routes**
  - Preparation of selected PACOTS tracks will be completed daily by Oakland ARTCC
  - Normally six tracks are generated daily:
    - Track X KLAX to NZAA,
    - Track W KLAX to ASSY
    - DARPS Track Y KLAX to NZAA,
    - DARPS Track Z KLAX to YSSY
    - Track 21 NZAA to KLAX
    - Track 20 YSSY to KLAX



# Westbound North American - Taipei, Hong Kong and Manila PACOTS

- **The westbound PACOTS were expanded to include destinations of Taipei, Hong Kong, and Manila**
  - Westbound PACOTS tracks serving these destinations are published twice daily
- **Time Frame**
  - As indicated in the daily track messages NOTAM
- **Notification of Tracks**
  - Notification of PACOTS “H” and “I” will be transmitted by TDM and NOTAM at approximately 1100 UTC
  - Notification of PACOTS “J”, “K” and “L” will be by TDM and NOTAM at approximately 0200 UTC



# Westbound North American - Taipei, Hong Kong and Manila PACOTS

- **Flight Planning**

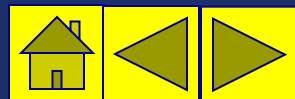
- Participating aircraft flying between North America and Taipei, Hong Kong and Manila should flight plan as follows:
  - As described in the daily TDM and NOTAM
  - Participating aircraft departing from California between 0500 UTC and 1200 UTC with destinations of Taipei, Hong Kong or Manila should file PACOTS tracks “J”, “K”, or “L”

- **Preparation of North American-Taipei, Hong Kong and Manila PACOTS**

- Oakland ARTCC will complete preparation of selected PACOTS serving Taipei and Hong Kong twice daily
- Normally two tracks will be developed
  - Tracks are to be designated alphabetically with the letters “H”, “I”, “J” and “K”
- Preparation of a single PACOTS serving Manila will be published as needed and identified by the letter “L”.



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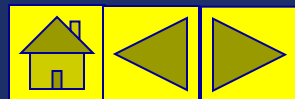
# PACOTS Track Advisory Procedures

- Track Advisory consists of Oakland ARTCC Traffic Management Unit (TMU) publishing Westbound PACOTS tracks and users submitting their requested departure time with associated preferred routes and altitudes
- This is followed by Oakland ARTCC TMU assigning user-requested flights to the tracks in a manner that results in efficient use of airspace
- Oakland ARTCC TMU then publishes a Gateway Reservation List (GRL) that contains oceanic release times and associated route and altitude assignments

**NOTE:** Track Advisory User's Guide for Dispatchers can be found at ([LINK](#))



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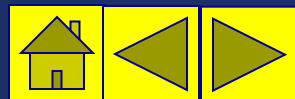


# PACOTS Track Advisory Procedures

- The Westbound PACOTS NOTAM identifies tracks subject to Track Advisory procedures for aircraft entering the tracks between 1900 UTC and 0100 UTC
- Aircraft participating in Track Advisory procedures receive priority over nonparticipating aircraft
- Users who are unable to comply with time constraints will be accommodated to the extent feasible



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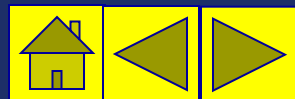
# PACOTS Track Advisory Procedures

- **Conventions**

- Pilots who determine their assigned departure times cannot be met are required to coordinate immediately with their dispatcher for an acceptable alternative
- Pilots are allowed a 10-minute departure window, beginning at the assigned take off time and ending 10 minutes later
- Longitudinal separation is applied at the PACOTS entry fix
  - Aircraft not over the entry fix within 10 minutes after the entry fix time may not receive their initial reserved en route altitude
- The Track Advisory program will only accept right way cardinal altitudes at or above FL280, FL300, FL320, FL340



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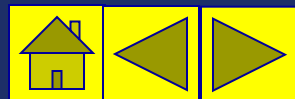


# Strategic Lateral Offsets in Oakland and Anchorage Oceanic Airspace

- The Strategic Lateral Offset Procedure is standard operating practice for oceanic operations to mitigate wake turbulence and collision risk by distributing aircraft laterally and equally across the three available positions
- This procedure is to be used for both wake vortex encounters, and to mitigate the heightened risk of collision when non-normal events such as operational altitude deviation errors and turbulence induced altitude deviations occur
- The Strategic Lateral Offset Procedure will be applied throughout the Oakland and Anchorage Oceanic FIRs

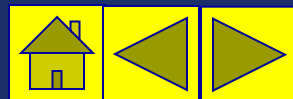


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# Procedures for Strategic Lateral Offsets

- **Aircraft without automatic offset programming capability must fly the centerline**
- **Aircraft capable of being programmed with automatic offsets may fly one of three positions**
  - Centerline
  - Offset 1 NM right of centerline
  - Offset 2 NM right of centerline
- **Pilots should use whatever means are available (e.g. communications, visual acquisition, GPWS or TCAS/ACAS) to determine the best flight path to fly**
- **Any aircraft overtaking another aircraft is to offset within the confines of this procedure, if capable, so as to create the least amount of wake turbulence for the aircraft being overtaken**

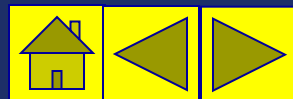


# Procedures for Strategic Lateral Offsets

- **For wake turbulence purposes, pilots are to fly one of the three positions and never offset to the left of centerline nor offset more than 2 NM right of centerline**
  - It is recognized that the pilot will use his/her judgment to determine the action most appropriate to any given situation and has the final authority and responsibility for the safe operation of the airplane
  - The use of air-to-air channel, 123.45, may be used to co-ordinate the best wake turbulence offset option
- **Pilots may apply an offset outbound at the oceanic entry point but must return to centerline at the oceanic exit point**



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# Procedures for Strategic Lateral Offsets

- Aircraft transiting radar-controlled airspace (e.g. Guam or Vancouver Center) may remain on their established offset positions but must advise the radar controller on initial contact of their offset status
- There is no ATC clearance required for this procedure it is not necessary that ATC be advised
- Voice position reports are to be based on the current ATC route/course clearance and not the exact co-ordinates of the offset position

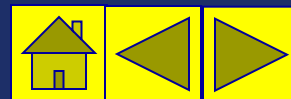


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# CPDLC Procedures for Honolulu and Guam

- **Flights Overflying Honolulu Control Facility Airspace**
  - Prior to entering Honolulu Control Facility airspace, aircraft will receive an END SERVICE message that will result in termination of CPDLC
  - Aircraft shall re-log on to CPDLC prior to reentering Oakland Oceanic FIR airspace when Honolulu Control Facility advises to contact en route communications or ARINC
- **Flights Entering Guam CERAP Airspace**
  - Contact Guam CERAP 250 miles out on 118.7, squawk 2100
- **Flights Overflying Guam CERAP Airspace**
  - Maintain the CPDLC connection with Oakland ARTCC; however, do not use CPDLC for ATC COM until Guam CERAP advises you to contact en route communications or ARINC

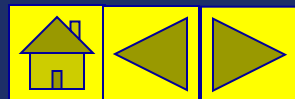


# Guam Area Preferential Routing

- Due to traffic congestion within the Oakland FIR north, south and west of the Guam CERAP (a 250NM RADIUS of the NIMITZ VORTAC-UNZ) preferred routings have been established as depicted on the next slides
- These routings apply to all turbojet aircraft at or above FL280 operating within the Oakland FIR north, south or west of the Guam CTA
- The acronym FPRD means flight plan route to destination



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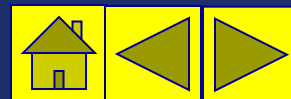
# Guam Area Preferential Routings

- **Southbound aircraft en route from the Tokyo FIR and Guam CERAP delegated airspace including flights overflying Guam**

OVER KEITH-	KEITH R584 FLASH FPRD.
OVER PADKO-	PAKDO G339 FLASH FPRD.
OVER MONPI -	MONPI A597 RICHH FPRD.
OVER OMLET-	OMLET B586 SECEL FPRD.
OVER TEGOD-	TEGOD A337 SNAPP FPRD.
OVER TEEDE -	TEEDE A337 TEGOD FPRD.
OVER PAYEE -	PAYEE B586 OMLET FPRD.
OVER RICHH -	RICHH A597 MONPI FPRD.
OVER MIXSS -	MIXSS G339 PAKDO FPRD.
OVER LEOLA -	LEOLA R584 KEITH FPRD.



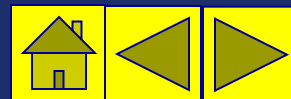
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# Guam Area Preferential Routings

- **North or Southbound aircraft within the Oakland FIR South and West of Guam**

OVER KEITH -	KEITH R204 KALIN OR KEITH A339 SHREE FPRD.
OVER SHREE -	SHREE A339 KEITH FPRD.
OVER KALIN -	KALIN R204 KEITH FPRD.
OVER FACED -	FACED A216 HOOVR FPRD.
OVER HOOVR -	HOOVR A216 FACED FPRD.
OVER PIKOK -	PIKOK B586 ERVIN FPRD.
OVER HUTEL -	HUTEL B586 PIKOK FPRD.
OVER RUTUS -	RUTUS G205 GOOFI FPRD.
OVER GOOFI -	GOOFI G205 RUTUS FPRD.



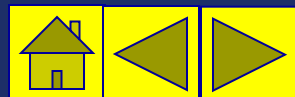
# Guam Area Preferential Routings

- **East and Westbound aircraft operating within the Oakland FIR South and West of Guam**

OVER KITSS -	KITSS R596 TIDEL OR KITSS G467 ENDAX FPRD.
OVER TIDEL -	TIDEL R596 GUSTO FPRD.
OVER ENDAX -	ENDAX G467 GUSTO FPRD.



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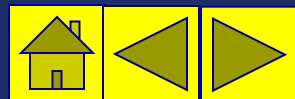


# Guam Area Preferential Routings

- Aircraft flight planning at or above FL280 with filed routes other than those described above should expect to be re-routed to the preferential route
- Requests for alternate routes will be considered on a real-time, individual basis as traffic permit, however, aircraft should file for and be prepared to fly the entire preferential route
- Aircraft operating EAST of 150E longitude are not affected



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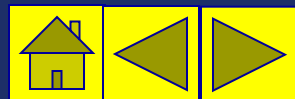


# Marshall Islands Flight Plans

- **File flight plans for flights out of Majuro prior to arrival**
- **If possible, file the Majuro departure flight plan at the same time as the flight plan into Majuro is filed**
- **If en route, file with Honolulu FSS, if possible, or through ARINC before arrival at Majuro**
- **If on the ground at Majuro and filing a flight plan with Majuro Radio is necessary, file at least three hours in advance of proposed departure time, if possible**



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# Marshall Islands Clearances

- **When requesting descent clearance into Majuro and the ground stop will be one hour or less, advise ATC and request a through clearance**
- **When requesting an IFR clearance while on the ground, make every effort to communicate through ARINC**
  - If unable to contact ARINC, make the request to Majuro Radio on 123.6 MHz allowing at least 30 minutes for communication delays
- **If unable to receive a clearance through any of the above means and you elect to depart VFR in accordance with ICAO Annex 2 and Document 7030, continue efforts to establish communication and obtain a clearance as soon as possible**



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# Marshall Islands Hazards

- **Kwajalein Atoll-Dyess AAF**

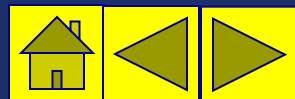
- Electromagnetic radiation will exist 24 hours daily within 10 NM radius of Dyess AAF from the surface to 13,000 feet
- Aircraft within this airspace may be exposed to direct radiation, which may be harmful to personnel and equipment

- **Kwajalein Atoll - 180 NM radius**

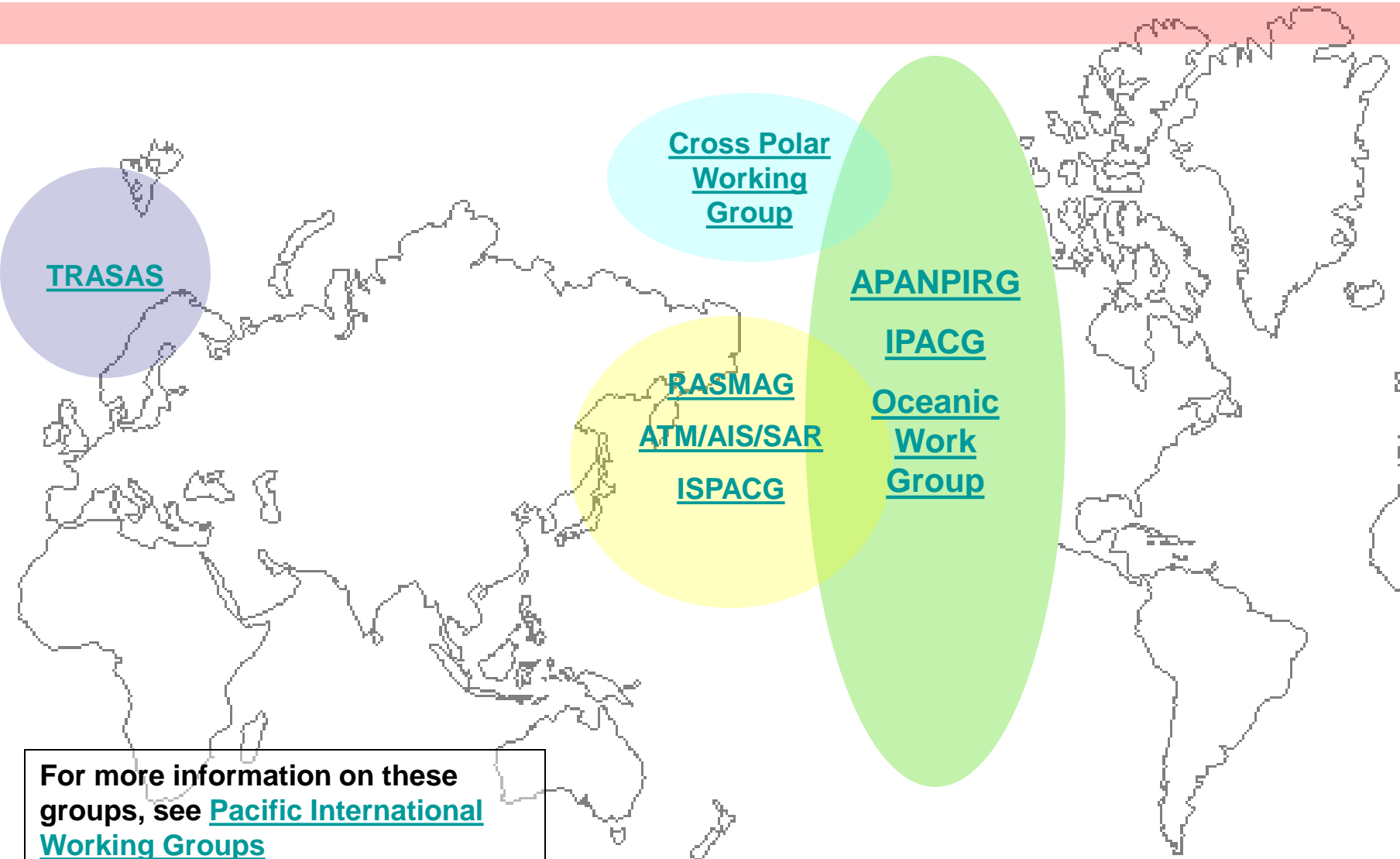
- Hazardous military activity will be conducted at all altitudes and flight levels within a 180 NM radius of Bucholz TACAN until further notice
- All nonparticipating VFR pilots are advised to remain well clear of the area
- IFR flights under ATC jurisdiction may expect possible reroute to and from Bucholz Airport
- For further information, contact USAKA Range Safety Officer (805) 355-1516 at Bucholz Tower or Oakland ARTCC



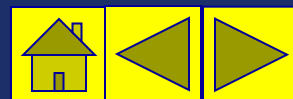
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# Pacific Oceanic Working Groups

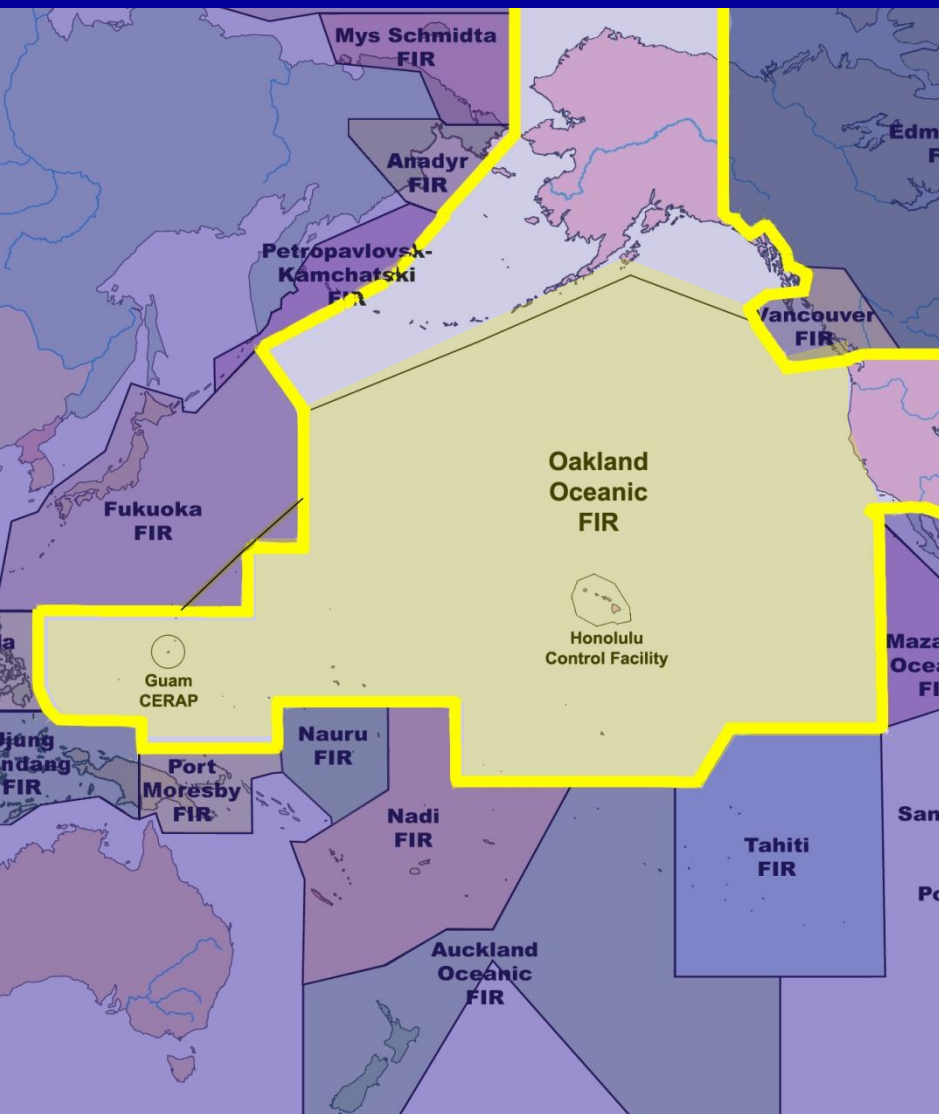


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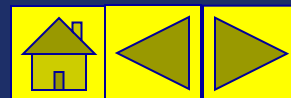
# Oakland Oceanic FIR



- Pacific Operations
- Oakland Air Route Traffic Control Center Procedures



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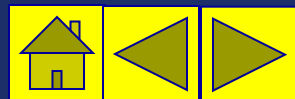


# Oakland Air Route Traffic Control Center (ARTCC) Procedures

- Lateral and Vertical Limits of Oceanic Control Areas
- Lower Separation Minima for Oakland Oceanic FIR
- Flight Plans
- Oceanic Position Reporting Procedures - Oakland Oceanic FIR
- Direct SATVOICE Capability
- Special Pacific Area Communications
- Controller Pilot Data Link Communications (CPDLC)
- Altimeter Setting - Oakland Oceanic FIR
- Climb Times/Change of Flight Level - Oakland Oceanic FIR



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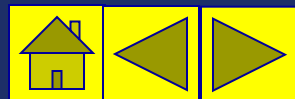


# Lateral and Vertical Limits of Oceanic Control Areas

- The Oceanic Control areas (CTA) is aligned laterally to coincide with the Oakland Flight Information Region (FIR), excluding the Hawaiian domestic area.
- Oceanic control areas have a lower limit of FL055, except where Class D or E airspace is designated, there is no upper limit



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# Lower Separation Minima

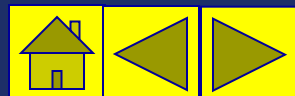
## Oakland Oceanic FIR

In accordance with ICAO Doc 7030, PAC-1 6.4, notice is hereby given that separation minima lower than those specified in 6.1 and 6.2 may be applied in accordance with the PANS-RAC DOC 4444-RAC 501 Part 111, sections 7, 8 and 9 within the Oakland Oceanic FIR. The use of lower separation standards within the airspace listed below is contingent upon satisfactory and current flight check data of the navigation aids on which those minima are based.

AIRSPACE	NAVIGATIONAL AIDS
100 NM seaward of the boundary of the Honolulu Domestic area	SOK, LIH, HNL, MKK, LNY, OGG, ITO, UPP and IAI VORTACS
50 NM of Guam	AJA NDB
130 NM of Wake Island	AWK VORTAC FL180-450
40 NM of Wake Island	AWK VORTAC SFC-FL180
50 NM of Johnston Island	APO NDB
130 NM of Midway Island	NQM TACAN FL180-450
40 NM of Midway Island	NQM TACAN SFC-FL180
50 NM of Majuro Island	MAJ NDB/DME
50 NM of Kwajalein Island	NDJ NDB
130 NM of Kwajalein Island	NDJ TACAN FL180-450
40 NM of Kwajalein Island	NDJ TACAN SFC-FL180
50 NM of Weno Island/Chuuk	TKK NDB/DME
50 NM of Yap Island	YP NDB/DME
50 NM of Ponape Island	PNI NDB/DME
50 NM of Saipan Island	SN NDB
50 NM of Babelthuap Island/Koror	ROR NDB/DME



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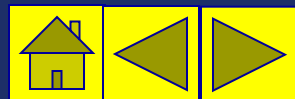


# Flight Plans

- **All aircraft entering Oakland's international oceanic system (KZAK) should address the Ocean21 automation system KZCEZQZX and KZAKZRZX**
- **Filing an EET in Flight Plan**
  - In accordance with ICAO DOC 4444, flight plans with routes entering the Oakland Oceanic FIR (KZAK) must contain the elapsed time (EET) in Field 18, an entry point for KZAK and an estimated time
  - It is not mandatory to file the boundary crossing point in Field 15 of the route of flight, but it is permitted
  - Omission of an EET in Field 18 causes rejection of the flight plan



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# Oceanic Position Reporting Procedures - Oakland Oceanic FIR

- **For non-ADS equipped aircraft “any” waypoint filed in the route of flight (item 15 of the ICAO flight plan) must be reported as a position report whether the filed waypoint is compulsory or not**
  - If a non-compulsory waypoint is not filed in item 15, it does not need to be reported
- **Aircraft with an active ADS connection should make one CPDLC position report over the FIR boundary and discontinue CPDLC waypoint reporting after the FIR report**



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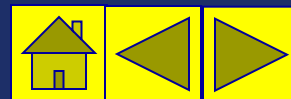


# Position Reports – Oakland Oceanic FIR

- **When operating on a fixed or NOTAM'ed route, report and estimate the designated reporting points using the specified names of such points or coordinates as specified in the NOTAM**
- **When operating on a random route:**
  - Flights whose tracks are predominantly east and west shall report over each 5 degrees or 10 degrees (10 degrees will be used if the speed of the aircraft is such that 10 degrees will be traversed within 1+20 or less) meridian longitude extending east and west from 180 degrees
  - Flights whose tracks are predominantly north and south shall report over each 5 degrees or 10 degrees (10 degrees if traversed within 1+20) parallel of latitude extending north and south of the equator
- **ATC may require specific flights to report more frequently than each 5 degrees for aircraft with slow ground speeds**
- **Position reports shall be transmitted at the time of crossing the designated reporting point or as soon thereafter as possible**



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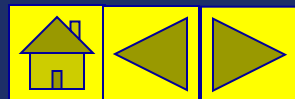


# Position Reports over Oakland Oceanic CTA/FIR Boundary

- **Aircraft entering the Oakland FIR/CTA are requested to forward boundary position reports via ARINC or CPDLC as follows:**
  - Boundary fixes that are compulsory reporting points
  - Filed fixes when they coincide with the FIR boundary
  - The boundary between the Manila, Ujung Pandang, Biak, Port Moresby and Nauru FIR's and the Oakland FIR
  - The Open Area Uncontrolled Airspace west of Mazatlan ACC and the Oakland FIR along 120 west longitude
  - Outbound from the Guam CERAP area at the 250 NM ARC from the UNZ VORTAC
  - Outbound from the Kwajalein (Bucholz Tower) Area at the 180 NM ARC from the NDJ TACAN
  - Eastbound PACOTS flights should report only those fixes detailed in the published route
  - When requested by ATC
- **Aircraft leaving the lateral limits of the Oakland FIR and entering uncontrolled airspace shall forward the time over the boundary outbound**



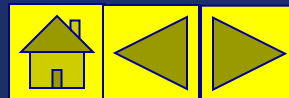
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# Exceptions to Position Reporting Procedures

- Within Oakland FIR, no 5 degree report need be made that would fall within 100 NM of Guam
- Aircraft cleared via terminal area routes report compulsory reporting fixes
- Other aircraft report 100 NM from Nimitz VORTAC
- Where other island destinations within the Oakland FIR are not more than 1 degree latitude/longitude from a 5 degree fixed line reporting point, the ETA and arrival report may be substituted in lieu of the adjacent fixed line report
- East of the Hawaiian Islands it will not be necessary to report the 155 degrees west position if position will be reported at the entry/exit fixes on the Honolulu Domestic/Oceanic boundary
- West of Honolulu, 160 degrees west need not be reported

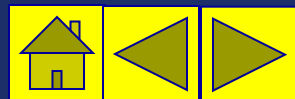


# Direct SATVOICE Capability

- **Oakland Oceanic FIR has the capability for air/ground and ground/air satellite telephone service (SATVOICE)**
- **Direct SATVOICE contact between the pilot and Oakland Oceanic FIR shall be limited to distress and urgency situations or other exceptional circumstances only**
- **The Oakland Oceanic FIR Oceanic Control INMARSAT Code is: 436697**



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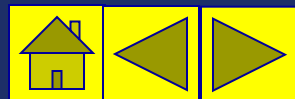


# Special Pacific Area Communications

- **Frequency 123.45 MHz has been designated for use in air-to-air communications between aircraft operating in the Pacific area out of range of VHF ground stations to exchange operational information and facilitate resolution of operational problems**



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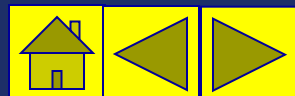
# Controller/Pilot Data Link Communications (CPDLC)

- **Oakland ARTCC has full CPDLC capability and normal service in the entire Oakland Oceanic FIR for FANS-1/A capable aircraft**
  - The Oakland Oceanic FIR log-on address is “KZAK”; the facility is “OAKODYA”
- **HF Communications Requirement**
  - Prior to entering the Oakland Oceanic FIR, contact ARINC on HF and identify the flight as CPDLC equipped
  - Provide SELCAL, departure and destination, aircraft registration number and SATVOICE telephone number, if available
  - Expect to receive primary and secondary HF frequency assignments for the entire route of flight within the Oakland Oceanic FIR
  - Pilots must maintain HF communications capability with ARINC at all times within the Oakland Oceanic FIR

**NOTE:** ICAO Global Operational Data Link Document (GOLD) procedures and requirements officially adopted by and applicable in the Oakland and Anchorage Oceanic FIRs can be found in the [ICAO Global Operational Data Link Document \(GOLD\)](#)



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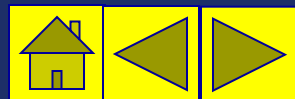


# CPDLC Log-On

- **Data link aircraft departing from airports along the west coast of North America and Hawaii should NOT logon to Oakland Oceanic (KZAK) until after leaving 10,000 feet**
  - This request is made to eliminate ADS periodic reports for aircraft that are still on the ground, which will assist in the transition from the domestic airspace automation environment
  - Additionally, this should reduce operator cost



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# CPDLC Log-On

- **Aircraft entering the Oakland Oceanic FIR CPDLC service area from non-CPDLC airspace**
  - Log on to CPDLC at least 15 but not more than 45 minutes prior to entering the Oakland Oceanic FIR CPDLC service area.
  - Contact ARINC on HF for a SELCAL check and inform them you are a CPDLC flight.
  - Send a position report when CPDLC is established.



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# CPDLC Log-On

- **Aircraft entering the Oakland Oceanic FIR CPDLC service area from adjacent CPDLC airspace**
  - Pilots should determine the stats of the CPDLC connection
  - If KZAK is the active center, the pilot shall:
    - Contact ARINC on HF
    - Identify the flight as a CPDLC flight, and
    - Send a position report via CPDLC
  - If KZAK is not the active center, the pilot shall, within 5 minutes after the boundary is crossed:
    - Terminate the CPDLC connection
    - Log on to KZAK
    - Contact ARINC on HF for a SELCAL check, and advise ARINC that they are a CPDLC flight
    - Send a position report when CPDLC ATC COM is established

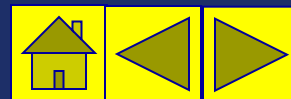


# CPDLC Position Report Message Format

- Oakland Center Oceanic (KZAK) cannot accept position reports containing latitude and longitude (lat/long) in the ARINC 424 format, which is limited to five characters (e.g. 40N50)
- Position reports in the KZAK CPDLC service area containing lat/long waypoints will be accepted in complete latitude and longitude format only
- Flights unable to send position reports in complete latitude and longitude format must accomplish position reporting via HF voice communications



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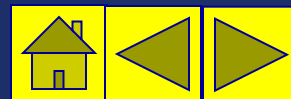


# Altimeter Setting - Oakland Oceanic FIR

- **Each person operating an aircraft shall maintain the cruising altitude or flight level of the aircraft by reference to an altimeter that is set**
  - Within the Honolulu domestic area, within 100 NM of the Nimitz VORTAC and within 100 NM of Kwajalein:
    - At FL 180 and above, to standard altimeter setting 29.92 inches of mercury (QNE)
    - Below 18,000' MSL, to current altimeter setting (QNH)
  - Within all other areas of the Oakland Oceanic FIR, at or above 5,500' MSL, to standard altimeter setting 29.92 inches of mercury (QNE)



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# Climb Times/Change of Flight Level – Oakland Oceanic FIR

- **Climb Times**

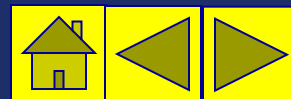
- A distinction should be made between the time at which higher flight level is requested and the time at which the next higher flight level can be accepted

- **Change of Flight Level**

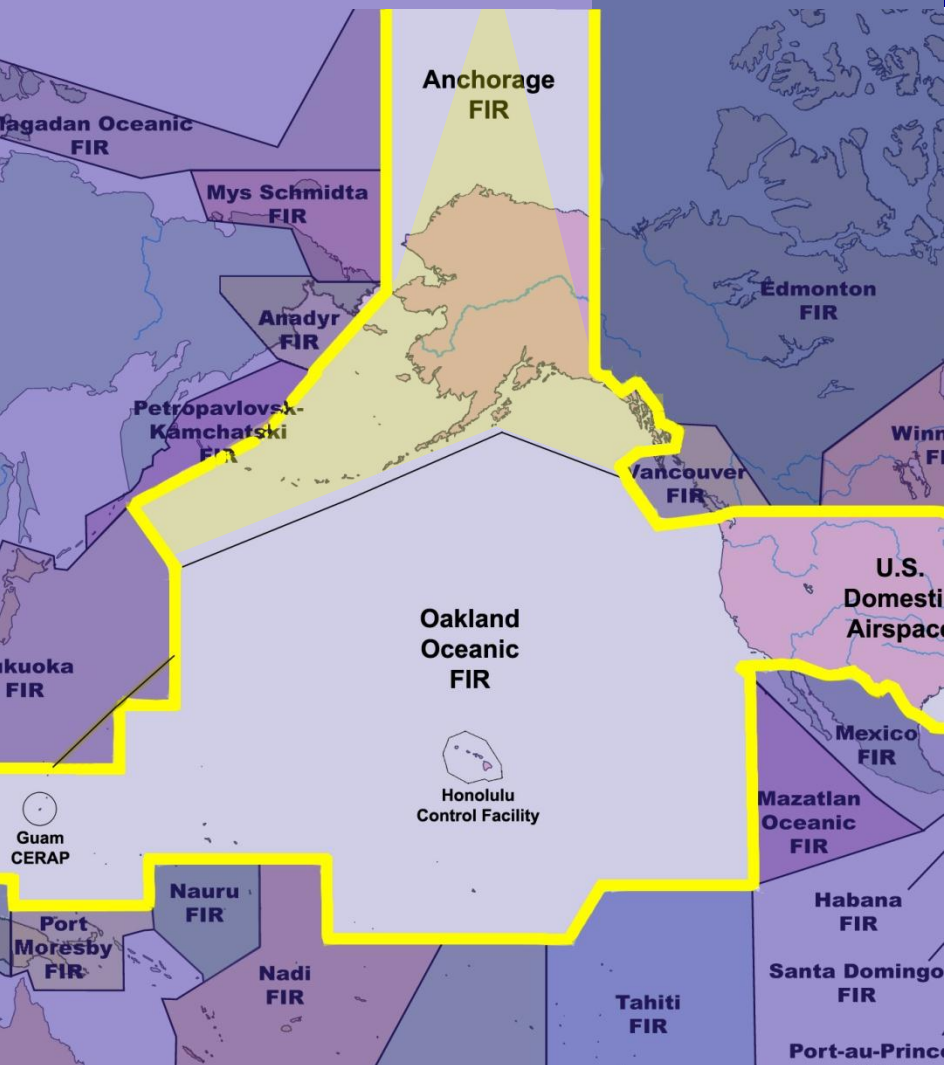
- Pilots are advised that when an aircraft is proceeding from one Oceanic Control Area to another at the time that a change of flight level is desired, coordination must be effected between the Oceanic Control Centers concerned before an ATC clearance can be issued
- A flight level request shown on a filed flight plan does not constitute authority for an aircraft to change flight level; a specific ATC clearance for the flight level change is required.



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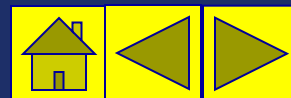
# Anchorage FIR



- Pacific Operations
- Anchorage Air Route Traffic Control Center Procedures



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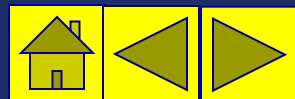


# Anchorage Air Route Traffic Control Center (ARTCC) Procedures

- **NOPAC Route System**
  - [General Information](#)
  - [Detailed Information](#)
- [Anchorage Oceanic FIR Separation Standards](#)
- [Flight Plans](#)
- [Cockpit Information](#)
- [Preferred Routes](#)
- [Two-way Routes](#)
- [Procedures for Non-RVSM Aircraft](#)
- [Communications](#)
  - [Controller Pilot Data Link Communications \(CPDLC\)](#)
- [Position Reporting](#)
- [Radar Coverage](#)
- [NOPAC Pilot Checklist](#)
- [Arctic Operations](#)



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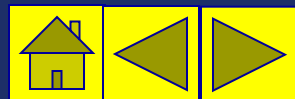


# NOPAC Route Information

- **R220**
  - One way westbound, even altitudes FL180-400, also FL330, FL350, FL370, FL390 and FL410
- **R580**
  - One way westbound, even altitudes FL180-400, also FL350, FL370 and FL390
- **A590**
  - One way eastbound, odd altitudes FL190-410, also FL300, FL320 and FL340
- **R591**
  - Two way, odd altitudes eastbound, even altitudes FL300-400 westbound
  - FL300, FL320 and FL340 available eastbound when route is part of published eastbound PACOTS
  - FL350, FL370 and FL390 available westbound when route is part of published westbound PACOTS



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# NOPAC Route Information

- **G344**
  - Two way, odd altitudes eastbound, even altitudes FL300-400 westbound
  - FL300, FL320 and FL340 available eastbound when route is part of published eastbound PACOTS
  - FL350, FL370 and FL390 available westbound when route is part of published westbound PACOTS
- **Radial/DME cross checks available as follows:**
  - For NATES on R220: SYA 329R/152DME
  - For ONEIL on R580: SYA 329R/102DME
  - For PINSO on A590: SYA 329R/052DME
  - For CHIPT on G344: SYA 148R/100DME



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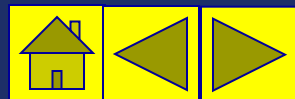


# NOPAC Transition Routes

- **Within the Tokyo FIR, Oceanic Transition Routes and, in one case, a Victor route, have been established for aircraft transitioning to or from the NOPAC Route System**
- **Within the Anchorage FIR, certain ATS routes are used for the same purpose, which include**
  - G583, B757, B757 (for westbound only between BAMOK and SELOM), R341, G469, A342, G215, R330, R451, R336, R338 and G349 (for westbound use only)



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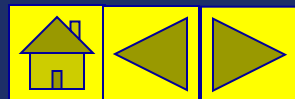


# NOPAC Reroutes

- Aircraft cannot always be accommodated on their flight planned NOPAC route
- In an effort to reduce both coordination time and coordination errors, Japan ATFM and Anchorage ARTCC have agreed on a common procedure to accommodate most reroutes
- Aircraft rerouted from one NOPAC ATS route to another NOPAC ATS route will be given short range clearances into the adjoining FIR's radar coverage airspace
- The receiving ATC facility will then issue further routing to the aircraft prior to the aircraft reaching the clearance limit



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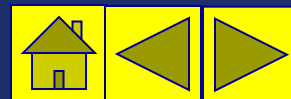




# Anchorage Oceanic FIR Separation Standards

- **Lateral**

- Primary form of lateral separation within the NOPAC is 25 NM either side of centerline based on [RNP 10](#)
- Non-RNP 10 aircraft and all aircraft operating below FL180 are provided [standard oceanic separation](#) (50 NM either side of centerline)
- Non-RNP 10 aircraft operating on published NOPAC routes at or above FL 300 may be provided [composite separation](#) from any aircraft occupying an adjoining route where standard longitudinal separation is not available
- A combination of 50 NM lateral, based on RNP 10, and standard oceanic separation may also be applied between aircraft pairs where one aircraft has RNP 10 approval and the other does not
  - The minimum lateral separation between aircraft on adjacent tracks in this case is 75 NM – one half the lateral protected airspace for each aircraft
- As noted above, standard oceanic separation will be applied between non-RNP 10 aircraft at any altitude and may be applied between all aircraft operating below FL 180 unless radar service is being provided or the aircraft is within domestic control areas where domestic non-radar control procedures are applied, as in Control 1234



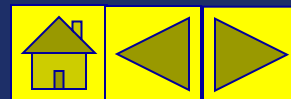
# Anchorage Arctic FIR Separation Standards

- **Lateral**

- Primary form of lateral separation within Anchorage Arctic Fir is 25 NM either side of centerline based on [RNP 10](#)
- Non-RNP 10 aircraft are provided 90 NM (45 miles either side of centerline) separation standard between tracks
- In the adjoining FIRs:
  - Edmonton utilizes a 60 NM (30 miles either side of centerline) separation standard based on Canadian Minimum Navigation Performance Standards
  - Magadan/Murmansk ACCs utilize a 60 km lateral separation standard



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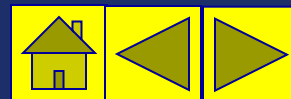
# Anchorage Oceanic FIR Separation Standards

- **Longitudinal**

- Within the Anchorage Oceanic FIR aircraft will be provided standard oceanic longitudinal separation (15 minutes in trail)
- This may be reduced to 10 minutes when Mach Number Technique is utilized
- Additionally, Anchorage ARTCC has been authorized to conduct a trial of the 10 minute longitudinal separation standard, regardless of the application of Mach Number Technique
- Within the Anchorage Domestic FIR (including Control Areas 1234H, 1487H and the Norton Sound High Control Area), domestic separation minima of 10 minutes between aircraft is applied
  - This separation may be reduced via other standard or special procedures
- Anchorage ARTCC has been authorized to utilize reduced DME/RNAV longitudinal separation for brief periods when aircraft are beyond normal VHF coverage
  - This procedure permits the separation of aircraft by 30 DME or 40 RNAV miles for periods of 90 minutes or less beyond VHF coverage

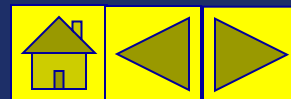


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# Anchorage Oceanic FIR Separation Standards

- **Vertical**
  - Reduced Vertical Separation Minimum ([RVSM](#)) is applied from FL290 to FL410 inclusive in Anchorage Domestic, Anchorage Oceanic and Anchorage Arctic FIRs
  - Non-RVSM aircraft are separated from all other aircraft, both RVSM and non-RVSM, by 2000 ft within this stratum

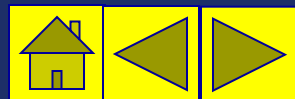


# Flight Plans

- **All operators planning IFR flight operation in the Anchorage Oceanic and Domestic FIRs west of 165 west longitude and south of 63 north latitude must file flight plans with both PAZAZQZX and PAZNZQZX**
  - Failure to file with both system addresses may result in a delay of ATC services
- **All aircraft flight planned to cross the Anchorage/Tokyo FIR boundary shall be established on a NOPAC route prior to the boundary**
- **Aircraft operating beneath the NOPAC (at or below 17,000 ft MSL) may flight plan via random routes**
  - See [Random Flight Plans](#)



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# Flight Plans

- Operators in the NOPAC Route System are reminded that flight plans must be filed in accordance with ICAO procedures and formats to allow for automatic flight data processing
- In addition to the normal requirement of addressing the flight plan to all control centers en route, associated oceanic radio stations should also be addressed
- When flight planning via transition tracks and/or ATS routes, list:
  - Point of entry
  - Route designator
  - Point of exit

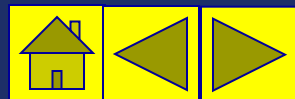


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# Cockpit Information

- **To minimize flight crew and controller workload, information should be carried for routes other than the one being flown**
- **This material should include route data, reporting points, fuel burn, winds aloft, time en route, etc., for those routes compatible with the direction of flight**
  - Data for routes R591 and G344 should also be carried regardless of the direction of flight as they are used for both eastbound and westbound traffic
- **Carrying this information will avoid unnecessary delays in the event a route or flight level other than that filed in the original flight plan is assigned by ATC**
- **Readily available material will facilitate timely crew decisions as to their preference of alternate routes or altitudes**

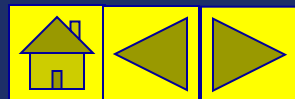


# Preferred Routes – General Information

- Anchorage ARTCC will periodically issue international [NOTAMs](#) specifying the preferential routes to be flown within the Anchorage FIR
  - Each NOTAM will individually denote, during specified time periods, either the westbound or eastbound tracks
- Flights filed contrary to these NOTAMs or preferred routes may expect reroutes, sequencing delays, and/or severe altitude restrictions for same direction, crossing, or opposite direction traffic
- Aircraft must have [RVSM](#) and [RNP 10](#) approval from the appropriate State authority to operate in the NOPAC between FL290 and FL410, inclusive
  - Operators who do not have approval should see information on [RVSM exceptions](#) and [RNP](#) restrictions



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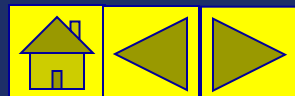
# NOPAC Preferred Routes – Westbound

- **R220 at all times utilizing even cardinal altitudes from FL180 to FL400 and FL330, FL350, FL370, FL390 and FL410**
  - Above FL410, altitudes will be assigned IAW ICAO Annex 2, Appendix 3b
  - Flights departing PANC or PAED shall flight plan NODLE thence R220
  - Flights departing from all other airports within the Anchorage FIR and flights crossing the Edmonton/Anchorage FIR boundary shall flight plan:
    - **OME R338 NATES R220 ENM direct NOLTI (or any route which will keep the aircraft south of ENM and north of NOSHO until joining R220 at NOLTI), or NEONN (or any fix east of NEONN on \$R220) thence R220**
  - Flights crossing the Vancouver/Anchorage FIR boundary or the Oakland/Anchorage FIR boundary shall flight plan one of the following:
    - **NOLTI (or any fix east of NOLTI on R220) thence R220**
    - **ONEOX B757 NULUK R220**
    - **Via the daily Westbound PACOTS Track Message**
  - Flights utilizing R338 NATES R220 between 2200UTC and 0300UTC shall be able FL370 by 100 NM southwest of OME
    - Flights unable to meet this restriction shall advise ATC as soon as possible for a reroute to R220 due to crossing non-radar traffic

**NOTE:** Due to route crossing in a non-radar environment, westbound arrivals destined for RJCC (Sapporo/New Chitose), RJCH (Kakodate), or RJSM (Misawa), as well as other westbound aircraft leaving the NOPAC Route System via V51, must file R220

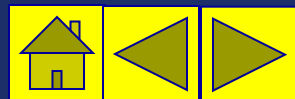


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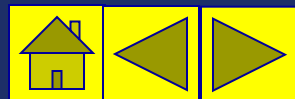
# NOPAC Preferred Routes – Westbound

- **R580 at all times utilizing even cardinal altitudes from FL80 to FL400 and FL350, FL370 and FL390 with the following guidelines:**
  - Aircraft departing PANC or PAED shall flight plan NODLE R220 NICH0 thence R580
  - As specified in the daily westbound PACOTS Track Message
  - Flight plan route ORVIL (or any fix east of ORVIL on R580) thence R580
- **R591 utilizing even cardinal altitudes from FL300 to FL400 with the following guidelines:**
  - As specified in the daily westbound PACOTS Track Message
  - Must cross AKISU between 0000UTC and 0600UTC
- **G344 utilizing even cardinal altitudes from FL300 to FL400 with the following guidelines:**
  - As specified in the daily westbound PACOTS Track Message
  - Must cross CUTEE between 0000UTC and 0600UTC
  - When R591 is designated as a Westbound PACOTS track, but G344 is not, G344 will be available eastbound at and below FL290 only between 2200UTC and 0600UTC



# NOPAC Preferred Routes – Eastbound

- **A590 at all times utilizing odd cardinal altitudes from FL190 to FL 410 and FL300, FL320 and FL340**
  - Above FL410, altitudes will be assigned IAW ICAO Annex 2, Appendix 3b
- **R591 at all times unless it has been designated as a westbound PACOTS track**
  - R591 is then available eastbound between 0900UTC and 2100UTC
  - Odd cardinal altitudes FL190 and FL410 are utilized
  - Above FL410, altitudes will be assigned IAW ICAO Annex 2, Appendix 3b
- **G344 at all times unless it or R591 has been designated a westbound PACOTS track**
  - G344 is available eastbound from 0900UTC to 2100UTC only, if it has been designated a westbound PACOTS track
  - When R591 is designated a westbound PACOTS track but G344 is not, G344 will be available eastbound at and below FL290 only, between 2200UTC and 0600UTC



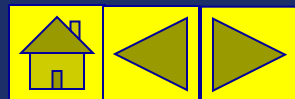
# Two-Way Routes

- **R591 may be used as a westbound track for flights crossing AKISU between 0000UTC and 0600UTC when designated as a westbound PACOTS track**
  - R591 is closed to all traffic from 2101UTC to 2359UTC and from 0601UTC to 0859UTC when designated as a westbound PACOTS track
- **G344 may be used as a westbound track for flights crossing CUTEF between 0000UTC and 0600UTC when designated as a westbound PACOTS track**
  - G344 is closed to all traffic from 2101UTC to 2359UTC and from 0601UTC to 0859UTC when designated as a westbound PACOTS track
  - G344 is closed to eastbound traffic at or above FL310 from 2000UTC to 0600UTC when R591 is designated as a westbound PACOTS track

**NOTE:** Check the North America-Japan PACOTS Track Message for daily route usage



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# Exceptions for Non-RVSM Approved Aircraft Operating in Anchorage FIR

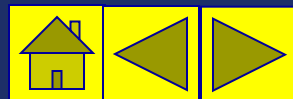
- **Non-RVSM civil aircraft requesting approval to operate in the Anchorage FIR should take the following actions**
  - If departing within the Anchorage FIR, or if Anchorage ARTCC is the first oceanic control facility along the route of flight:
    - Obtain approval from Anchorage ARTCC Traffic Management Unit normally not more than 12 hours and not less than 4 hours prior to the intended departure time
  - If entering the Anchorage FIR from another oceanic FIR:
    - Notify the Anchorage Traffic Management Unit after approval is received from the first affected oceanic center and prior to departure
    - Include the remarks “APVD non-RVSM” in Field 18 of the ICAO Flight Plan
- **Non-RVSM State aircraft should comply with special procedures**

**NOTE:** Filing the flight plan is NOT appropriate notification. Anchorage Traffic Management Unit can be reached as follows: Phone: +1-907- 269-1108, Fax: +1-907-269-1343, AFTN: PAZAZQZX

This process is not intended as a means to circumvent the normal [RVSM approval process](#).



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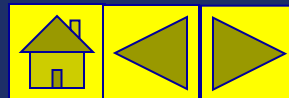


# Separation of Non-RVSM Approved Aircraft Operating in Anchorage FIR

- **Non-RVSM aircraft operating in the RVSM stratum will be separated from all other aircraft by a minimum 2000 ft vertical separation**
- **It should be noted that RVSM approved aircraft will be given priority for level allocation over non-RVSM aircraft**
- **ATC may clear non-RVSM approved aircraft to climb or descend through RVSM airspace, provided they do not climb or descend at less than the standard rate, or level off while passing through the RVSM stratum**



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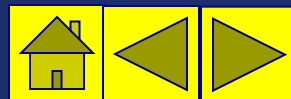


# Restrictions for Non-RNP-10 Aircraft Operating in the NOPAC Route System

- **Aircraft not approved for RNP 10 operations are restricted to flight planning one of the following NOPAC routings:**
  - Westbound on R220 at all times
  - Eastbound on A590 at all times
  - Eastbound on G344 when available for eastbound flights
- **The altitudes available on the above routes are at or below FL280 and at or above FL430**
- **ATC may reroute non-RNP 10 aircraft to other routes due to traffic**



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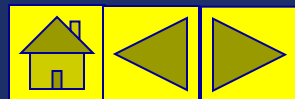
# Communications

- **HF Communications**

- Most North Pacific area communications are conducted on HF single sideband
- Aircraft reports, requests and messages are relayed by the station to the appropriate ATC center by interphone, computer display or teletype message
- The relay function, coupled with the need for intercenter coordination, may cause delays in the handling of routine aircraft requests
- There are priority message handling procedures for processing urgent messages which reduce any time lag; however, flight crews should take possible delays into consideration when requesting step climbs, reroutes or other routine requests requiring ATC action
- Delays can be reduced through advance planning of such requests



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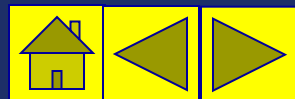
# Communications

- **Air to Ground VHF Communications**

- Oceanic radio stations will normally have VHF capability within 200NM of their geographic location
- This frequency may be used prior to departure from the adjacent international airport to establish communications with the radio station, or for aircraft operating within range to relay progress reports or other messages to their company's operations center
- The normal VHF (119.1 MHz) initial contact points with Anchorage ARTCC for eastbound flights established in the NOPAC are:
  - On A590, 150NM west of PINSO
  - On R591, 150NM west of Shemya (SYA)
  - On G344, 150NM west of CHIPT
- Initial contact may be attempted on 128.2 MHz as a backup to 119.1



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# Communications

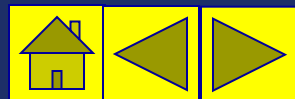
- **Air to Air VHF Communications**
  - Frequency 123.45 MHz has been designated for use in air-to-air communications between aircraft operating in the Pacific area out of range of VHF ground stations to exchange operational information and facilitate resolution of operational problems
- **Satellite Voice System (SATCOM Voice)**
  - SATCOM Voice is available at Anchorage Center
  - Direct SATVOICE contact between the pilot and Anchorage Oceanic FIR shall be limited to distress or urgent situations, or flight safety situations only
  - Aircraft desiring to contact ARINC may use the following INMARSAT security numbers

INMARSAT Number: 436602

Commercial Telephone Number: +1 925-371-3920



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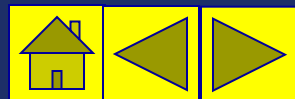


# Controller Pilot Data Link Communications (CPDLC)

- **CPDLC service is operational throughout the Anchorage Oceanic and Domestic FIRs**
- **Anchorage ARTCC uses two separate en route automation systems, each having a different CPDLC (FANS) logon address**
  - Use logon address **PAZN** for all CPDLC communications in the Anchorage Oceanic FIR and in that portion of the Anchorage Domestic FIR west of 165 degrees west longitude and south of 63 degrees north latitude
  - Use logon address **PAZA** for all other areas of the Anchorage Domestic FIR and the Anchorage Arctic FIR
- **Aircraft entering Anchorage FIR from Canadian or Russian airspace are requested to logon at or prior to crossing the FIR boundary**



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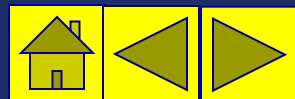


# Controller Pilot Data Link Communications (CPDLC)

- Aircraft entering Anchorage FIR from Oakland or Tokyo FIR will be provided automatic FANS addressing
- Aircraft departing Alaskan airports are requested to logon after departure, but before leaving FL180
- Flight crews are reminded that use of CPDLC does not remove requirements to monitor VHF/HF frequencies
- Aircraft within VHF coverage may make position reports via CPDLC and make requests to ATC via VHF
- After logon, Anchorage ARTCC automation will provide automatic FANS address forwarding for flights entering the Magadan, Tokyo and Oakland FIRs



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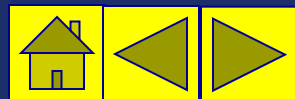
# Position Reporting

- **For flights operating in the Anchorage Oceanic and/or Anchorage Domestic FIR west of 165 degrees west longitude:**
  - All waypoints filed in Field 15 of the ICAO flight plan must be reported as a standard position report
  - Within this airspace, position reports are to be made via ADS, CPDLC or voice communications in that order of preference
  - In addition, aircraft with active ADS connections must make a CPDLC position report when crossing the Anchorage FIR boundary inbound to insure correct CPDLC connectivity
  - In the event of VHF/HF or CPDLC position reporting, position reports are to be transmitted at the time of crossing the designated reporting point of as soon thereafter as possible

**NOTE:** See also [Contents of Position Reports](#) and [Pilot Weather Reports](#)



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# Radar Coverage

- **The vast majority of the NOPAC Route System within Anchorage FIR extends beyond the coverage of normal ATC radar**
- **Present radar capability is limited to sites at St. Paul Island, Cold Bay and Shemya Island, each with an approximate range of 200NM**
  - The radar sites at St. Paul and Shemya Islands are secondary only
  - Unlike primary radar, secondary radar can only receive information on aircraft with an operating transponder; it cannot paint a target based on a radar echo from the aircraft's skin
  - Aircraft transitioning through the radar environment with an inoperable transponder may expect severe altitude restrictions until established on their cleared NOPAC route



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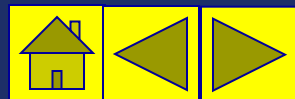
# NOPAC Pilot Checklist

**To assist pilots who are less familiar with the NOPAC Route System, the following informal checklist is provided:**

1. Do you have the recommended information for each NOPAC route?
2. Do you have a reliable timepiece aboard for reference and have you had a recent accurate time check?
3. Are you sure of the serviceability of your long range navigational system?
4. Are you familiar with the Mach Number Technique?
5. Did you conduct a check of your airborne weather radar, if so equipped?
6. Have you preplanned your actions in case one of your long range navigational systems fails?
7. After departure, did you conduct an HF communications check and pass your departure time to aeronautical radio?
8. Did you give ATC your climb times?
9. If eastbound between 145E and 170E, or westbound between 164E and 145E, did you set your transponder on Mode A Code 2000? If east of 170E or west of 145W, is your transponder set on the discrete code assigned by ATC?



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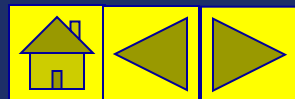


# Arctic Operations

- [Anchorage Arctic FIR](#)
- [Separation Standards](#)
- [Flight Plan Requirements](#)
- [Preferred Routes](#)
- [Communications](#)
- [Russian IFR Routes](#)
- **Anchorage Track Advisory**
  - [Program](#)
  - [Procedures](#)
- [Russian VFR Routes](#)



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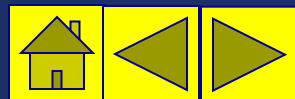


# Anchorage Arctic FIR

- **Generally consists of that airspace lying between 141° west longitude and 168° 58.38' west longitude south of the geographic North Pole running approximately to 72° north latitude**
- **Arctic operations also incorporates that portion of the Anchorage Domestic FIR which overlies the north coast of the Alaskan land mass**
- **Traffic flows in this airspace consist of**
  - Cross Polar flights - A generally east/west flow for flight transiting between North American and Asian airports via the Russian Polar airspace
  - Trans Polar flights – An east/west flow of flights transiting between northern European and Alaskan airports



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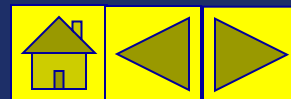
# Anchorage Arctic FIR Separation Standards

- **Lateral**

- Effective 18 November 2010, the FAA implemented a 50 NM reduced lateral separation standard in the Anchorage Arctic FIR. NAV CANADA will implement in the Edmonton FIR/Control Area CTA on 10 March 2011
  - The Anchorage Arctic FIR is that airspace bounded by: 90N 141W, 72N 141W, 72N 158W, 68N 168 58 23W, 90N 168 58 23W. The vertical boundaries are from flight level (FL) FL230 to FL600 inclusive
- 50 NM lateral separation will be applied in the designated portions of the Anchorage Arctic FIR and Edmonton FIR/CTAs, between aircraft authorized RNP 10 and/or RNP 4
- Within the Anchorage Arctic FIR the lateral separation standard applicable to aircraft not authorized RNP 10 and/or RNP 4 is 90 NM
  - Within the Edmonton FIR/CTAs, the lateral separation standard applicable to aircraft not authorized RNP 10 and/or RNP 4 will be 60 NM for Canadian Minimum Navigation Performance Specifications (CMNPS) equipped flights and 90 NM for all other flights

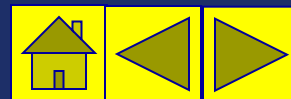


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# Anchorage Arctic FIR Separation Standards

- Policies for application of other lateral separation standards in airspace outside the Arctic RNP 10 CTAs will not be affected
- 90 NM (45 miles either side of centerline) separation standard between tracks
- In the adjoining FIRs:
  - Edmonton utilizes a 60 NM (30 miles either side of centerline) separation standard based on Canadian Minimum Navigation Performance Standards
  - Magadan/Murmansk ACCs utilize a 60 km lateral separation standard
- **Longitudinal**
  - 15 minutes between turbo jet aircraft
  - This may be reduced through application of the ICAO recognized Mach Number Technique
  - In the adjoining FIRs, both Canadian and Russian, the 15 minute standard is used
    - Reducible to 10 minutes through application of Mach Number Technique



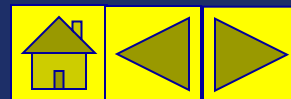
# Anchorage Arctic FIR Separation Standards

- **Vertical**

- RVSM is applied from FL290 to FL410 and aircraft are separated by 1000 ft within this stratum
- Non-RVSM aircraft are separated from all other aircraft, both RVSM and non-RVSM, by 2000 ft within this stratum
- Aircraft in adjacent FIRs:
  - In the Edmonton FIR, aircraft are separated via RVSM procedures and minima
  - In the Magadan and Murmansk FIRs, aircraft are separated by 500 vertical meters at and below 12,100 meters, and by 1000 vertical meters above 12,100 meters

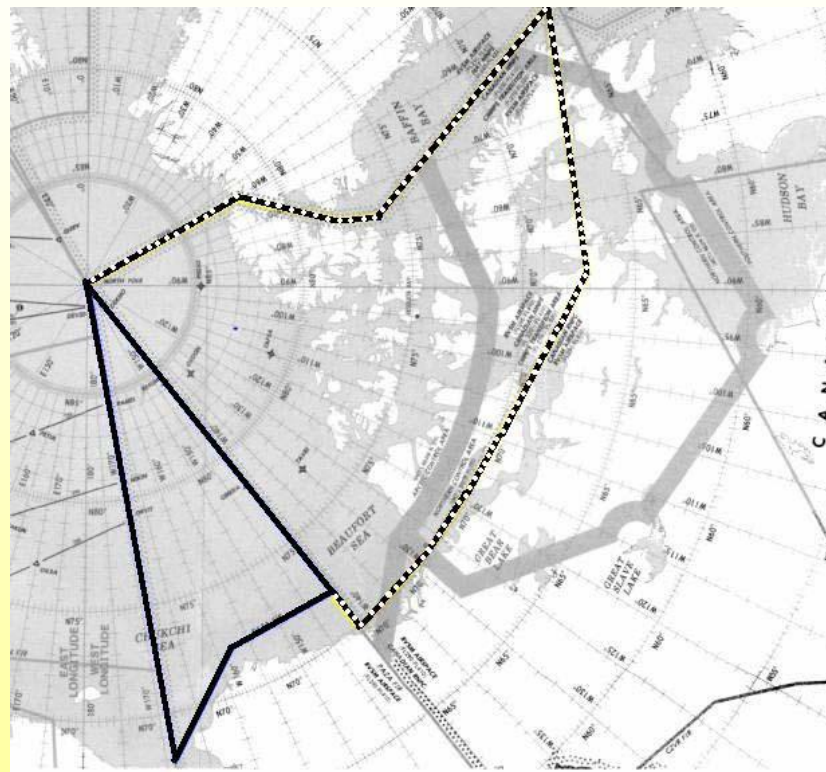


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# Arctic 50 NM Lateral Separation

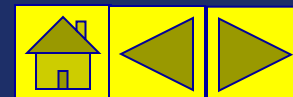
- This diagram depicts the airspace where the 50 NM lateral separation standard will be applied



— Anchorage Arctic FIR, solid line  
... Edmonton FIR, RNP-10 CTA, dotted line



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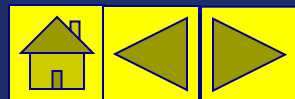
# Arctic Flight Plan Requirements

- **Cross Polar**

- All aircraft shall flight plan and report a position crossing 141° west longitude
- Operators flight planning ORVIT (7900.0N 16858.4W), regardless of direction of flight, shall flight plan a point along 141° west longitude over or south of OMEKA (7810.6N 14100.0W)
- Operators flight planning NIKIN (8049.6N 16858.4W), regardless of direction of flight, shall flight plan a point along 141° west longitude over or north of COALL (8000.0N 14100.0W)

- **Trans Polar**

- Operators shall flight plan via ATS tracks M450, M451 or M452 within the Anchorage FIRs
- Flights filing between FYU and 141° west longitude shall flight plan via ADREW J160 or POTAT J167



# Arctic Preferred Routes

**Preferred routes connecting with the PANC terminal area are:**

- **Northbound**

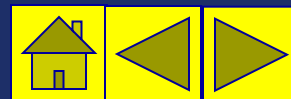
- M450: ANC J115 FAI direct KARLL
- M451: ANC J115 FAI direct ARBEZ
- M452: ANC J115 FAI direct HARVZ
- M453: ANC J115 FAI J120 FYU J160 ADREW
- M454: ANC J115 FAI J120 FYU J167 POTAT

- **Southbound**

- M450: KARLL direct TKA J125 ANC
- M451: ARBEZ direct ENN J125 ANC
- M452: HARVZ direct ENN J125 ANC
- M453: ADREW J160 FYU J120 FAI direct ENN J125 ANC
- M454: POTAT J167 FYU J120 FAI direct ENN J125 ANC



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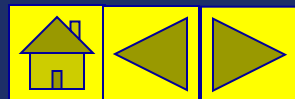


# Arctic Communications

- **Controller Pilot Data Link Communication (CPDLC)**
  - Operational in that portion of the Anchorage Arctic FIR south of 84° north latitude
  - The logon address for this airspace is **PAZA**
  - Aircraft entering the Anchorage Arctic FIR from Canadian or Russian airspace must perform a manual logon
  - Aircraft logged on to Anchorage's system and transitioning to the Edmonton or Magadan CPDLC systems will be provided auto address forwarding service
  - Due to the high latitude and satellite coverage foot print, flight crews of CPDLC equipped aircraft are requested to logon via CPDLC but must also maintain a listening watch on appropriate HF frequencies



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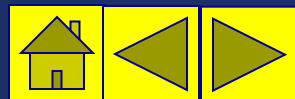


# Arctic Communications

- **HF Voice communications capability exists within the Anchorage Arctic FIR as follows:**
  - GANDER RADIO on frequencies of the North Atlantic NAT D network, via 2971, 4675, 8891 and 11279 KHz
    - Position reports along 141° west longitude in the Arctic FIR should be routinely made thru GANDER RADIO
    - GANDER RADIO will also relay aircraft requests to Anchorage ARTCC while the aircraft are within Anchorage FIRs
  - MAGADAN CONTROL on frequencies 4672, 5694, 8950 or 11390 KHz
    - Position reports for WESTBOUND flights crossing 168° 58.4' west longitude shall be made to the appropriate Russian ACC via relay thru MAGADAN CONTROL
    - EASTBOUND flights crossing 168° 58.4' west longitude shall relay their position reports thru GANDER RADIO
  - SAN FRANCISCO ARINC maintains an HF transmitter/receiver at Barrow, Alaska primarily for long distance operational control, and does not provide routine ATC communications relays, but may be used when other methods fail
    - Frequencies monitored are 3013, 6640, 11342, 13348, 17925 and 21964 KHz
    - Position reports along 141° west longitude in the Arctic FIR may also be made via San Francisco ARINC
- **Satellite Voice System (SATCOM Voice)**



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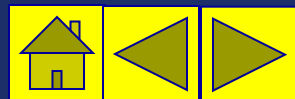


# Russian IFR Routes – General Information

- **This information is provided as a planning aid for flights which will cross the FIR boundary between the Anchorage and the following Russian FIRs:**
  - Murmansk, Magadan, Mys Schmidta, Anadyr or Petropavlovsk/ Kamchatsky FIRs
- **Traffic Advisory Procedures noted in RED are mandatory**
  - Failure to comply with these procedures may lead to delays, sub-optimal altitude assignment and/or denial of entry into the FIR
  - Flight planners and dispatchers must routinely refer to [PAZA International NOTAMs](#) for late breaking information which may extend or amend the information presented here
- **Murmansk and Magadan FIRs contain oceanic airspace wherein oceanic ATM procedures are applied**
  - Routes crossing the Anchorage/Murmansk and Anchorage/Magadan FIR boundaries are referred to as Cross Polar routes
- **Domestic procedures are utilized for flights crossing the other Anchorage/Russian FIR boundaries**
  - These are referred to as Russian Trans East (RTE) routes



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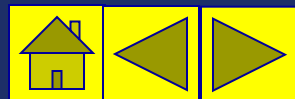


# Russian IFR Routes – General Information

- **Altitude assignments within Russia are denoted in meters**
  - All aircraft transiting the Anchorage/Russian FIR boundaries will be required to transition between feet and meters
- **Routings through Russian airspace are limited to published ATS routes and available altitudes on those routes are also limited**
- **Entry into Russian airspace requires prior coordination and approval**
  - Flight planners must refer to the Russian Aeronautical Information Publication (AIP) for complete information on airspace entry requirements
- **In order to establish a safe, orderly and expeditious flow of traffic across the Anchorage/ Russian FIR boundaries, Anchorage ARTCC has established a [Track Advisory Program](#)**



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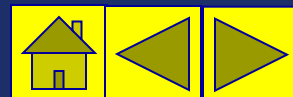


# Anchorage Track Advisory Program

- The Track Advisory (TA) program is designed to assist ATC in sequencing same altitude aircraft proceeding westbound over the Russian FIR entry fixes
- In order for the TA program to work efficiently, all parties must work cooperatively by complying with the TA [procedures](#) and by keeping the TA program updated with current/correct information
- Electronic copies of the Track Advisory Users Guide are available upon request to Anchorage ARTCC International Procedures at +1 907 269 1801



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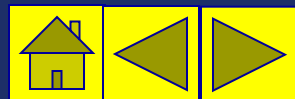


# Anchorage Track Advisory Procedures

- Traffic Advisory Procedures noted in **RED** are mandatory
- **All westbound operators flight planning to cross the Anchorage/Russian FIR boundary at or above FL280 (or above 8000 meters) shall participate in the TA program**
- **Cross Polar and Russian Trans East route users shall submit formatted TA requests (TKF messages) via NADIN/AFTN to Anchorage ARTCC (PANCZOZD) or ARINC (ANCDPXA) as follows:**
  - For flights crossing the Anchorage/Russian FIR boundary between 1700UTC and 0700UTC, submit no later than 1430UTC
  - For flights crossing the Anchorage/Russian FIR boundary between 0700UTC and 1700UTC, submit no later than 0430UTC
- **Participants without NADIN/AFTN may submit requests via fax to +1 907 269 1343 or telephone +1 907 269 1104**



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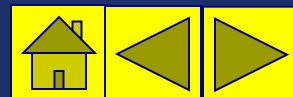


# Anchorage Track Advisory Procedures

- **A Gateway Reservation List (GRL) will be published according to the following table:**

Trackload Program	File TKF	Compile and Send GRL	Negotiation Period	Archive Time
1700-0700 UTC	0900-1430 UTC	1430 UTC	1430-0000 UTC	0000 UTC
0700-1700 UTC	0015-0430 UTC	0430 UTC	0430-0900 UTC	0900 UTC

- **The further a flight is from its filed fix crossing time the more likely it is to receive a less than optimal altitude and/or reroute**
- **Available ATS routes and associated FIR boundary crossing fixes are:**
  - DEVID G490 or B480, RAMEL G491, NIKIN G226, ORVIT G494, LISKI A218, FRENK B244 or G902, KUTAL B233, VALDA G212, and BESAT G583

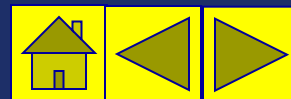


# Anchorage Track Advisory Procedures

- **Usable altitudes, that is altitudes which may be filed in the Anchorage TA program are:**
  - For routes B233, G212, G226 and G902: 8600, 9600, 10600 and 11600 meters
  - For routes A218 and B244: 9600, 10600 and 11600 meters
  - For routes B480 and G490: FL310, FL350 and FL390
  - For routes G226, G491 and G494: FL320, FL340 and FL380
  - For routes DEVID, ORVIT, PILUN and LISKI: FL300/320, FL340 and FL380
  - For routes RAMEL and NIKIN: FL300/320, FL340 and FL360/380
- **Aircraft filing a track slot request (TKF) thru the Anchorage TA program for boundary crossing fix FRENK must denote the planned airway (B244 or G902) in the remarks section of the TKF**
  - See current [PAZA international NOTAM](#) for TKF filing instructions

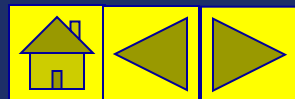


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# Anchorage Track Advisory Procedures

- **Flights planning G583 shall use one of the following transitions to MARCC:**
  - OME R338 MARCC G583
  - ENM G583
  - NEONN G349 MARCC G583
- **Aircraft filing B244, G902, B233, G212 or G583 eastbound into the Anchorage FIR shall use one of the following transitions:**
  - B244/G902: Aircraft shall flight plan FRENK B244 OTZ
  - B233: Aircraft shall flight plan KUTAL B233 GAL
  - G212: Aircraft shall flight plan VALDA H222 MCG
  - G583: Aircraft shall flight plan MARCC G583 ENM or MARCC R338 OME
  - B241: Aircraft shall flight plan RUSOR B241 ROCET
  - B240: Aircraft shall flight plan ERNIK B240 ENM



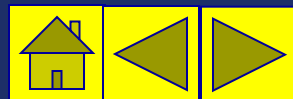


# Russian VFR Routes

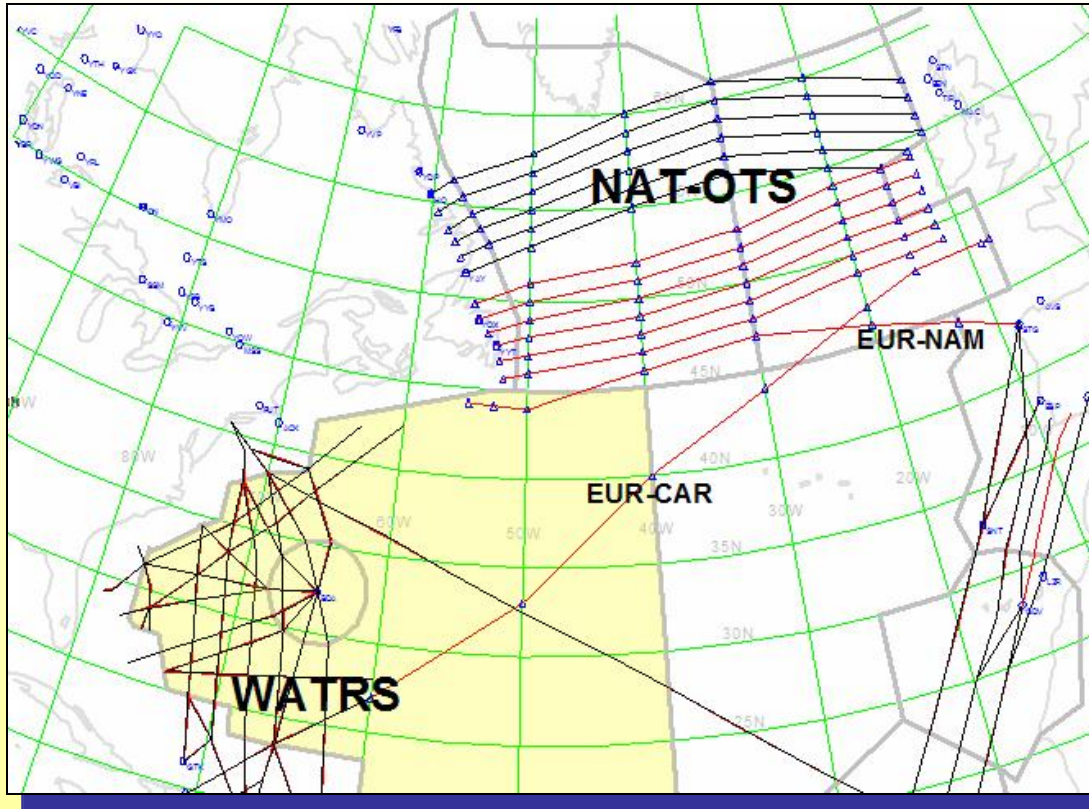
- Refer to the [Supplement Alaska](#) for information on Russian ATS Route B-369 Visual Flight Rules for General Aviation Aircraft and Border Crossing Procedures



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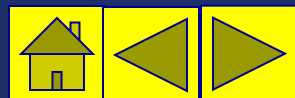
# Atlantic Operations



- [IFR/VFR Operations](#)
- [Mandatory Pilot Altitude Reports](#)
- [Atlantic Oceanic Working Groups](#)
- [New York Air Route Traffic Control Center](#)
- [North Atlantic Operations](#)
- [West Atlantic Route System \(WATRS\) Operations](#)



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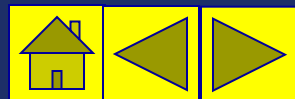


# IFR/VFR Operations

- **Flights in Atlantic oceanic airspace must be conducted under Instrument Flight Rules (IFR) procedures when operating:**
  - Between sunset and sunrise
  - At or above FL 60 when operating within the New York FIR
  - Above FL180 when operating within the Miami FIR and in the San Juan Control Area
- **Flights between the east coast of the U.S. and Bermuda or Caribbean terminals and traversing the New York FIR at or above 5,500 feet MSL should be especially aware of this requirement**



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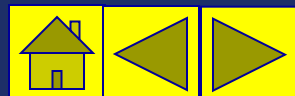
# Mandatory Pilot Altitude Reports

- In addition to reading back altitude assignments, pilots shall report reaching any altitude assigned within RVSM airspace
- This serves as a double check between pilots and controllers and reduces the possibility of operational errors
- This requirement for altitude read back and reports of reaching assigned altitudes applies to both RVSM and CVSM altitudes (i.e., flight levels 330, 340, 350, 360, and 370)

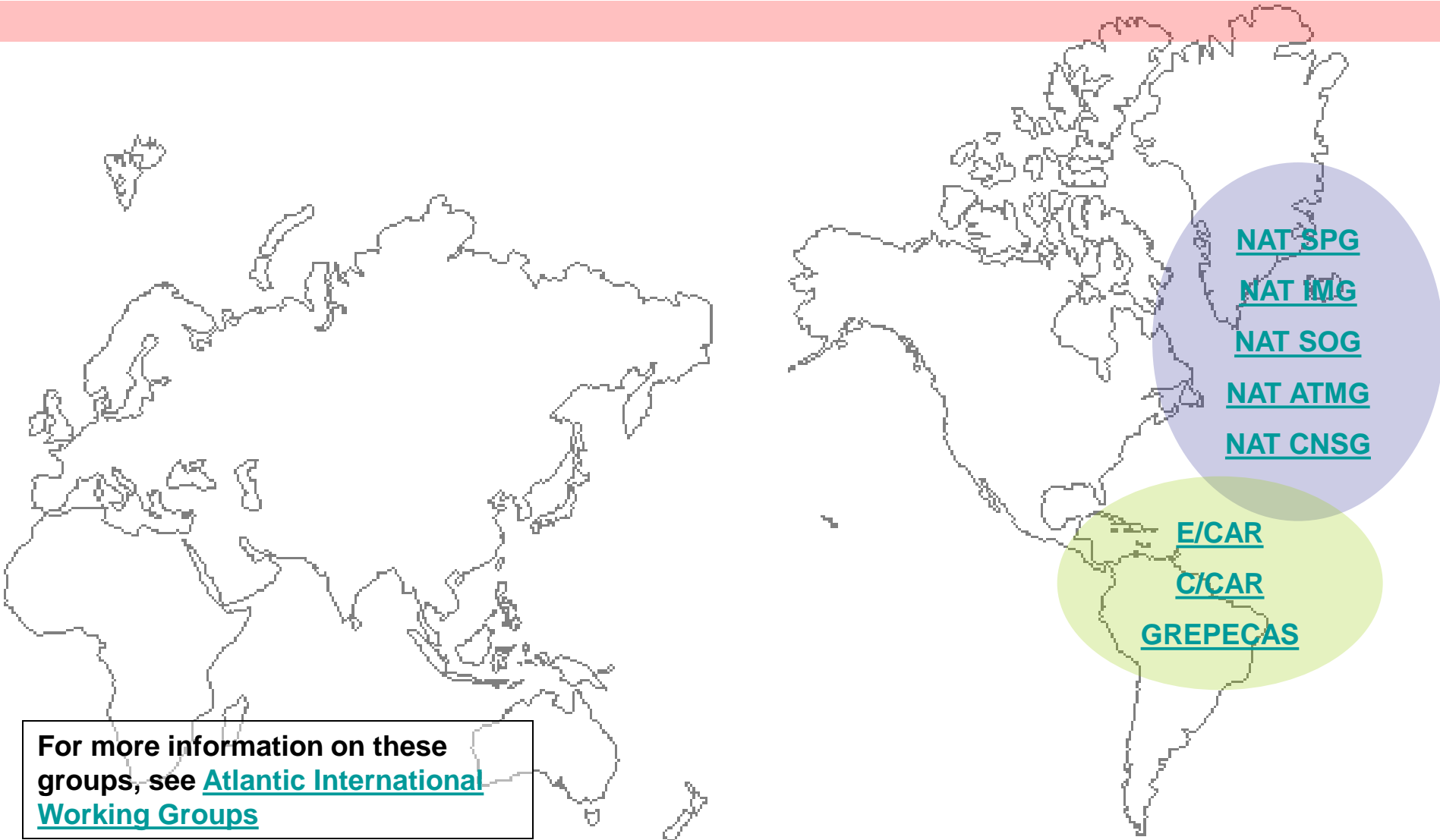
**EXAMPLE** – *(Initial altitude read back): “Global Air 543 climbing to flight level 360”*  
*(Upon reaching assigned altitude): “Global Air 543 level at flight level 360”*



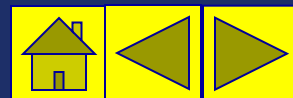
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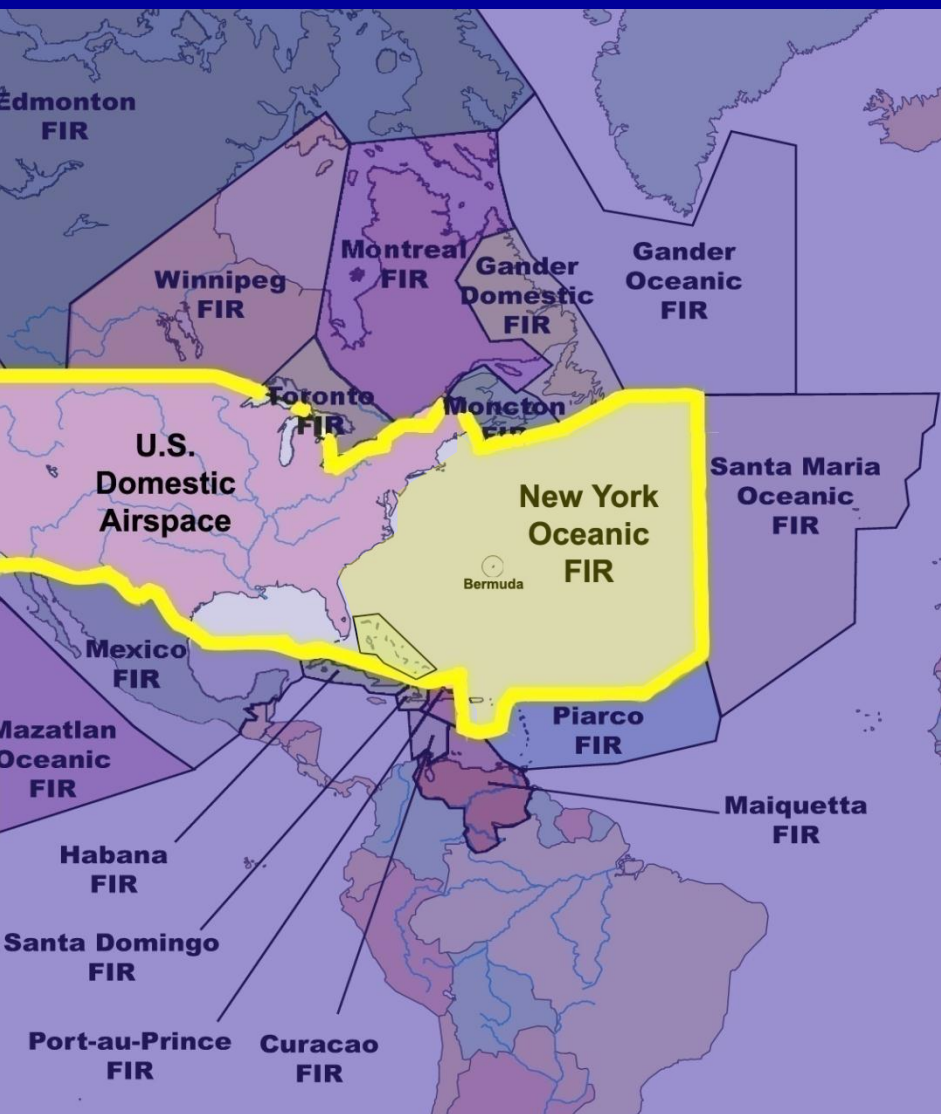
# Atlantic Oceanic Working Groups



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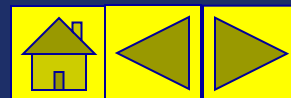
# New York Oceanic FIR



- Atlantic Operations
- Atlantic Oceanic Working Groups
- Separation Standards
- Flight Plan Addressing
- Data Link Procedures
- Position Reporting
- HF/VHF Communications
- SATVOICE Capability



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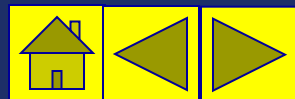
# New York FIR Separation Standards

- New York Oceanic CTA/FIR outside of the West Atlantic Route System (WATRS) is transition airspace
- 50 NM lateral separation is applied between aircraft authorized RNP 10 or RNP 4 operating at any altitude above the floor of controlled airspace

**NOTE:** See also [ICAO Flight Plan Addressing](#)



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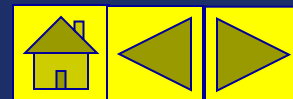
# ICAO Flight Plan Addressing

Airspace to be Entered	Required AFTN Addresses
New York (NY) Oceanic CTA/FIR	KZWYZOZX
Boston ARTCC & NY Oceanic	KZWYZOZX only
NY domestic and/or Bermuda & NY Oceanic	KZNYZQZX & KZWYZOZX
Washington (KZDC) & NY Oceanic	KZDCZQZX & KZWYZOZX
Jacksonville (KZJX) & NY Oceanic	KZJXZQZX & KZWYZOZX
Miami (KZMA) & NY Oceanic	KZMAZQZX & KZWYZOZX
San Juan & NY Oceanic	TZSUZRZX & KZWYZOZX

**NOTE:** If operators do not address flight plans to KZWYZOZX, services may be reduced (50 NM lateral separation cannot be applied to them).



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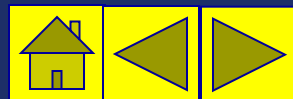


# New York FIR Data Link Procedures

- New York ARTCC provides full Controller Pilot Data Link Communications (CPDLC) and Automatic Dependant Surveillance-Contract (ADS-C) services throughout it's Oceanic Airspace to FANS-1/A capable flights
- The New York Oceanic FIR FANS LOGON address is “KZWW”
- CADS LOGON is not supported
- Flights should use ADS for position reporting and CPDLC for all other ATC communications while in the New York Oceanic Area
  - See also [Position Reporting](#)



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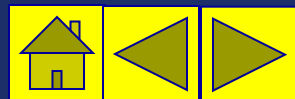


# New York FIR Data Link Procedures

- **LOGON/Entry Procedures for Aircraft Entering the KZWY Data Link Service Area From Non-Data Link Airspace:**
  - LOGON to KZWY at least 15 minutes but not more than 45 minutes prior to entering the New York Oceanic CTA/FIR
  - PRIOR to entering the New York Oceanic FIR contact ARINC on HF or VHF
  - See also [HF/VHF Communications Requirements](#)

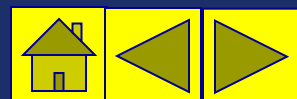


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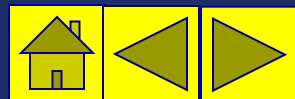
# New York FIR Data Link Procedures

- **For flights entering the New York Oceanic FIR from adjacent CPDLC airspace, CPDLC and ADS services will be forwarded automatically by Santa Maria and Gander OCA's**
  - CPDLC connections will be transferred approximately 5 minutes prior to the boundary crossing point
  - Pilots should determine the status of the FANS connection when crossing the New York Oceanic FIR boundary
    - If "KZWY" is the active connection, when crossing the New York Oceanic FIR boundary the pilot shall;
      - Contact ARINC on HF providing the information as outlined in the [HF/VHF comm requirements](#)
    - If "KZWY" is not the active center, when crossing the New York Oceanic FIR boundary the pilot shall;
      - Terminate the CPDLC connection, then log-on to "KZWY"
      - Contact ARINC on HF providing the information as outlined in in the [HF/VHF comm requirements](#)



# New York FIR Data Link Procedures

- **For flights overflying New York Bermuda radar airspace**
  - Prior to entering New York Bermuda radar airspace, aircraft will receive an END SERVICE message that will result in termination of CPDLC
  - Aircraft shall re-log-on to "KZWY" prior to re-entering the New York Oceanic CTA/FIR when they are advised by ATC to contact ARINC on HF
- **For aircraft exiting the KZWY Data Link Service Area to adjacent non-CPDLC airspace**
  - Aircraft approaching New York Domestic, New York Bermuda radar, San Juan, Piarco, Jacksonville, Miami, Moncton, and Gander Domestic can expect a CPDLC uplink message containing the VHF frequency assignment for the next facility
  - CPDLC End Service will be sent approximately 5 minutes prior to the boundary crossing point.

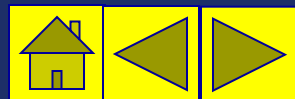


# New York FIR Data Link Procedures

- **In the event of Data Link failure or outages, flight crews shall contact New York Radio via HF voice for routine communications**
  - SATVOICE contact should be limited to distress and urgency situations
- **For questions regarding New York Data Link procedures:**
  - During normal business hours Monday through Friday, contact the New York Center Airspace and Procedures Office, telephone +1 631 468 1018, fax +1 631 468 4229
  - During all other times, contact the New York Center North Atlantic Supervisor by telephone +1 631 468 1496, or the Aeronautical Radio Supervisor by telephone +1 631 244 2483
  - [Additional information concerning CPDLC](#) can be found on the FAA web page



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# Position Reporting

- **Position reports should be made via ADS**
- **The two types of ADS contracts that will be established with each aircraft are**
  - A twenty (20) minute Periodic Report Rate and
  - A five (5) mile Lateral Deviation Event
  - This is in addition to normal waypoint reports
- **Operators should not use CPDLC for position reports but it should be used for all other ATC communications**
- **Position reports should be made via HF if ADS is not available.**
- **KZWY cannot accept CPDLC position reports containing latitude and longitude in the ARINC 424 format (e.g. 4050N)**

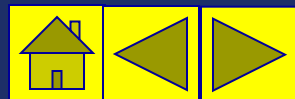


# HF/VHF Communication Requirements

- **Prior to entering the KZNY Oceanic Area**
  - Contact New York Radio (ARINC) on HF or VHF and identify the frequency which calls are being made on
  - Identify the flight as ADS and/or CPDLC connected
  - State the name of the next CTA/FIR to be entered along with the latitude and longitude or waypoint exit point leaving the ZNY FIR
  - Request a SELCAL check
  - Expect to receive primary and secondary HF frequency assignments from New York Radio for the route of flight within the Data Link Service Area



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# HF/VHF Communication Requirements

- **If the flight will exit New York Oceanic airspace into Domestic airspace (including overhead New York Bermuda radar)**
  - Identify the flight as ADS and/or CPDLC connected
  - State the track letter if operating on the Organized Track System (OTS)
  - State the name of the next CTA/FIR to be entered along with the latitude and longitude or waypoint exit point leaving the New York FIR
  - Request a SELCAL check within the New York Oceanic FIR.

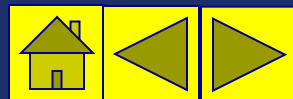
**NOTE 1:** ARINC May require flights to contact them at 60 West for HF frequency updates

**NOTE 2:** HF frequency updates are required due to frequency propagation

**NOTE 3:** Pilots must maintain SELCAL watch at all times



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# SATVOICE Capability

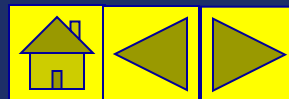
- New York Center oceanic control has capability for direct air-to-ground and ground-to-air satellite telephone service (SATVOICE)
- SATVOICE contact between the pilot and New York Center shall be limited to distress and urgency situations
- New York Center oceanic control may initiate SATVOICE calls to aircraft when other means are not available and communication is essential

**NOTE:** Aircraft should be logged onto the Atlantic Ocean Region West (AOR-W) satellite while operating in the New York FIR in order for New York Center to be able to initiate calls to the aircraft.

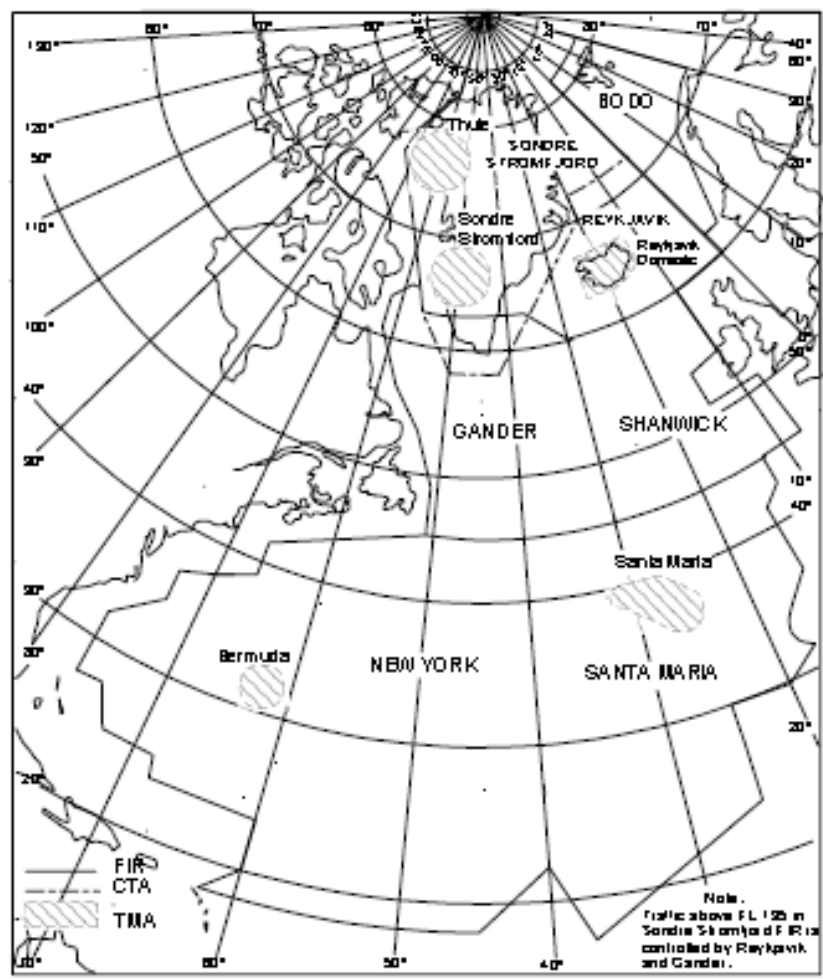
The INMARSAT Codes for New York Oceanic FIR are **436695** (MNPS and airspace east of 60W and south of 27N) and **436696** (WATRS Area)



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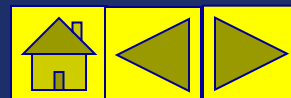
# North Atlantic Operations



- [Atlantic Oceanic Working Groups](#)
- [New York Oceanic FIR](#)
- [Adherence to Oceanic Clearance](#)
- [Strategic Lateral Offset Procedures](#)
- [Air/Ground Communications](#)
- [Oceanic Flights Entering NAT MNPSA via the New York OCA](#)
- [Radio Communication Failure](#)



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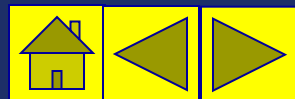


# North Atlantic Operations

- **ICAO publishes detailed information on North Atlantic (NAT) Operations**
  - [NAT Doc 001](#) provides guidance and information material concerning planning and management of flight operations in the NAT Region
  - [NAT Doc 006](#), NAT Contingency Plan contains details of arrangements to ensure, as far as possible, the continued safety of air navigation in the event of partial or total disruption of Air Traffic Services
  - [NAT Doc 007](#), Guidance Concerning Air Navigation In and Above North Atlantic MNPS Airspace
  - [NAT Doc 008](#), the Application of Separation Minima provides definitions, general rules pertaining to the application of separation minima applicable to aircraft operating in the NAT Region
  - [Global Operational Data Link Document \(GOLD\)](#) pertains to ATS data link operations, including flight management computer waypoint position reporting, automatic dependent surveillance waypoint position reporting, and controller pilot data link communications



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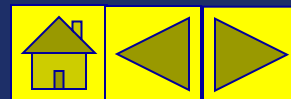


# Strategic Lateral Offset Procedures in the North Atlantic Region

- **Strategic Lateral Offset Procedures (SLOP) was created to reduce the risk of collision**
  - Involves the selection of offsets to the right of the cleared track and it is to be used as a Standard Operating Procedure (SOP) in the NAT Region
  - By allowing pilots to randomly select to fly either 1 or 2 NM right of the centerline, SLOP also incorporates wake turbulence avoidance procedures
- **Since the aircraft without automatic offset capability must fly the centerline, those that are capable are strongly encouraged to fly an offset**



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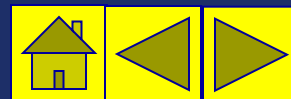


# Strategic Lateral Offset Procedures in the North Atlantic Region

- **Procedures for using the SLOP:**
  - If your aircraft can be programmed to fly an offset, fly a 1 NM or 2 NM offset to the right of the centerline
  - Being random is key to the procedure – follow your company's SLOP SOPs or find ways to choose different offsets for each flight
  - Always fly your offset to the right of the centerline
  - You should fly an offset from the oceanic entry point to the oceanic exit point
  - You don't need an ATC clearance for an offset
  - You don't need to report that you are flying an offset if you are in the NAT Region
  - If your offset causes wake turbulence problems for a following aircraft, choose a different SLOP option (0, 1 or 2 NM to the right of the centerline) from the one you are currently applying



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# Air/Ground Communications

- **All NAT air–ground messages are categorized under one of the following headings (excluding emergency messages):**
  - [Position Report](#)
  - [Request Clearance](#)
  - [Revised Estimate](#)
  - [Miscellaneous Message](#)
- **Pilots should observe the following rules:**
  - Use the correct type of message applicable to the data transmitted
  - State the message type on the contact call to the ground station or at the start of the message
  - Adhere strictly to the sequence of information for the type of message
  - All times in each of the messages should be expressed in hours and minutes
- **Pilots are required to:**
  - Report leaving a flight level as soon as you begin your climb or descent
  - Similarly, report reaching a flight level as soon as you are level
  - In RVSM airspace, provide the reports even if ATC has not specifically requested them



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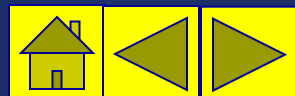
# Position Report

- **To be used for routine position reports**
- **Content and data sequence:**
  - “POSITION”
  - Flight identification
  - Present position
  - Time over present position (hours and minutes)
  - Present flight level
  - Next position on assigned route
  - Estimated time for next position (hours and minutes)
  - Next subsequent position
  - Any further information; e.g., MET data or Company message

**Example:** *“Position, SWISSAIR 100, 56N 010W 1235, flight level 330, estimating 56N 020W 1310, next 56N 030W”*



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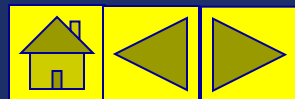
# Request Clearance

- To be used in conjunction with a routine position report, to request a change of Mach number, flight level, or route, and to request westbound oceanic clearance prior to entering Reykjavik, Santa Maria or Shanwick CTAs
- Content and data sequence:
  - “REQUEST CLEARANCE”
  - Flight identification
  - Present or last reported position
  - Time over present or last reported position (hours and minutes)
  - Present flight level
  - Next position on assigned route or oceanic entry point
  - Estimate for next position or oceanic entry point
  - Next subsequent position
  - Requested Mach number, flight level or route
  - Further information or clarifying remarks

**Example:** *“Request clearance, United 801, 56N 020W 1245, flight level 330, estimating 56N 030W 1320, next 56N 040W, requesting flight level 350”*



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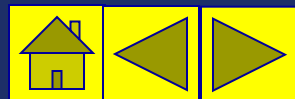
# Request Clearance

- To be used to request a change in Mach number, flight level, or route when a position report message is not appropriate
- Content and data sequence:
  - “REQUEST CLEARANCE”
  - Flight identification
  - Requested Mach number, flight level or route
  - Further information or clarifying remarks

**Example:** *“Request clearance, BAW 212, requesting flight level 370”*



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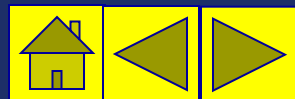
# Revised Estimate

- To be used to update estimate for next position
- Content and data sequence:
  - “REVISED ESTIMATE”
  - Flight identification
  - Next position on route
  - Revised estimate for next position (hours and minutes)
  - Further information

**Example:** *“Revised estimate, WDA 523, 57N 040W 0325”*



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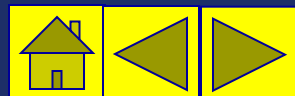


# Miscellaneous Message

- To be used to pass information or make a request in plain language that does not conform with the content of other message formats
- No message designator is required as this will be inserted by the ground station
- Content and data sequence:
  - Flight identification
  - General information or request in plain language and format free

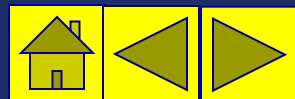


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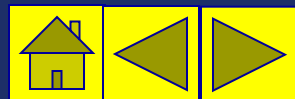
# Oceanic Flights Entering NAT MNPSA via the New York OCA

- When a pilot has received from ATC a complete route, altitude, and Mach Number, regardless whether or not the elements are issued concurrently or from the same ATC center, the pilot has an oceanic clearance and no specific request for one is necessary
- If the pilot does not have all the elements of the oceanic clearance, obtain them prior to entering MNPS airspace
- If any difficulty is encountered obtaining the elements of the oceanic clearance, the pilot **SHOULD NOT** enter holding while awaiting a clearance unless so directed by ATC
  - Proceed on the cleared route, or flight plan route into MNPS airspace and continue to request the clearance elements needed



# Radio Communication Failure

- The following procedures are intended to provide general guidance for North Atlantic (NAT) aircraft experiencing a communications failure
  - [General procedures](#)
  - [Failure prior to entering NAT oceanic airspace](#)
  - [Failure prior to exiting NAT oceanic airspace](#)
- These procedures are intended to complement and not supersede State procedures/regulations
- It is not possible to provide guidance for all situations associated with a communications failure



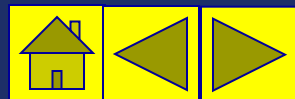
# Radio Communication Failure - General

- If so equipped the pilot of an aircraft experiencing a two-way-radio communications failure shall operate the secondary radar transponder on identity Mode A) Code 7600 and Mode C
- The pilot shall also attempt to contact any ATC facility or another aircraft and inform them of the difficulty and request they relay information to the ATC facility with whom communications are intended



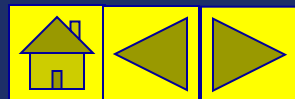
# Radio Communication Failure Prior to Entering NAT Oceanic Airspace

- **If operating with a received and acknowledged oceanic clearance, the pilot shall enter oceanic airspace at the cleared oceanic entry point, level and speed and proceed in accordance with the received and acknowledged oceanic clearance**
  - Any level or speed changes required to comply with the oceanic clearance shall be completed within the vicinity of the oceanic entry point
- **If operating without a received and acknowledged oceanic clearance, the pilot shall enter oceanic airspace at the first oceanic entry point, level, and speed, as contained in the filed flight plan and proceed via the filed flight plan route to landfall**
  - That first oceanic level and speed shall be maintained to landfall



# Radio Communication Failure Prior to Exiting NAT Oceanic Airspace

- **Cleared on flight plan route:**
  - The pilot shall proceed in accordance with the last received and acknowledged oceanic clearance to the last specified oceanic route point, normally landfall, then continue on the flight plan route
  - Maintain the last assigned oceanic level and speed to landfall. After passing the last specified oceanic route point, conform with the relevant State procedures/regulations



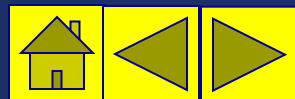


# Radio Communication Failure Prior to Exiting NAT Oceanic Airspace

- **Cleared on other than flight plan route:**
  - The pilot shall proceed in accordance with the last received and acknowledged oceanic clearance to the last specified oceanic route point, normally landfall
  - After passing this point, rejoin the filed flight plan route by proceeding directly to the next significant point ahead of the track of the aircraft as contained in the filed flight plan
  - Where possible use published ATS route structures, then continue on the flight plan route. Maintain the last assigned oceanic level and speed to the last specified oceanic route point
  - After passing this point conform with the relevant State procedures/regulations



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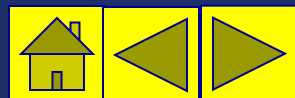
# West Atlantic Route System Plus Operations



- [Atlantic Oceanic Working Groups](#)
- [New York Oceanic FIR](#)
- [WATRS Plus Route Structure](#)
- [Objectives of the WATRS Plus Redesign](#)
- [Policy, Procedures and Guidance](#)
- [WATRS Plus Separation Standards](#)
- [Flight Planning](#)
- [In-Flight Contingency Procedures](#)
- [WATRS Plus/New York Oceanic Routing Procedures](#)
- [Y-Routes](#)



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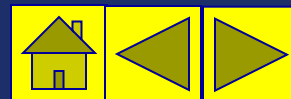
# WATRS Plus Route Structure

- On 5 June 2008, the FAA implemented a redesigned route structure, a reduced lateral separation standard and associated operational policies on oceanic routes or areas in the WATRS Plus Control Areas (CTA)
- Route structure redesign and 50 NM lateral separation was implemented in the following CTAs:
  - Atlantic portion of the Miami Oceanic CTA
  - San Juan CTA/FIR
  - West Atlantic Route System (WATRS)
- **New York Oceanic airspace outside of WATRS is transition airspace**
  - 50 NM lateral separation may be applied in this airspace between aircraft authorized RNP 10 or RNP 4

**NOTE:** See the [WATRS+ route structure redesign chart](#).

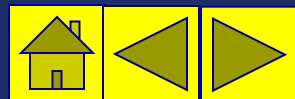


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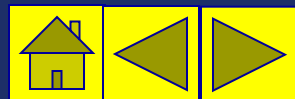
# Objectives of the WATRS Redesign

- Reduced lateral separation on oceanic routes or areas from 90 NM to 50 NM between aircraft authorized RNP 10 or RNP 4
- Resulted in over 95% of WATRS+ flights conducted by operators/aircraft that have been authorized RNP 10 or RNP 4 by the appropriate State authority
- Accommodated operation of the small percentage of flights not meeting the RNP 10 minimum requirement (See [Provisions for Accommodation of Non RNP 10 Aircraft](#))
- Redesigned the WATRS+ route structure to make approximately 40% more routes available to enhance operator access to time/fuel efficient routes and altitudes and to enhance en-route capacity
- Harmonized the WATRS+ route structure with that in the Caribbean and North Atlantic regions



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# WATRS Plus Separation Standards

- Lateral Separation Standards
- RNP Approval
- Operation on Routes not Requiring RNP Authorization
- Provisions for Accommodation of Non-RNP10 Aircraft

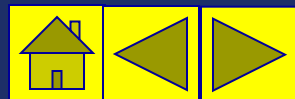


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# Lateral Separation Standards

- **50 NM lateral separation is applied in the WATRS Plus CTAs between aircraft authorized RNP 10 or RNP 4 operating at any altitude above the floor of controlled airspace**
- **50 NM lateral separation is applied in the New York Oceanic CTA/FIR outside of WATRS between aircraft authorized RNP 10 or RNP 4 operating at any altitude above the floor of controlled airspace**
- **Within the WATRS Plus CTAs, the lateral separation standard applicable to NonRNP 10 aircraft is 90 NM**
- **Policies for application of other lateral separation standards in airspace outside the WATRS Plus CTAs are not affected**

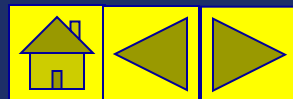


# RNP Approval

- The FAA also strongly recommends that operators flying on oceanic routes or areas obtain [RNP 10](#) or [RNP 4](#) approval to enhance operational flexibility
- This will benefit operators on oceanic routes or areas in WATRS Plus CTAs between FL290-410, where competition for routes and altitudes is greatest



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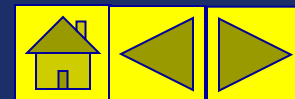




# Pilot Statement of RNP 10 or RNP 4 Approval Status, If Requested

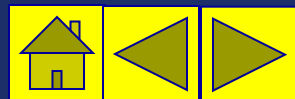
- If requested by the controller, the pilot shall communicate approval status using the following phraseology:

Controller Request	Pilot Response
(call sign) confirm RNP 10 or 4 approved	“Affirm RNP 10 approved” or  “Affirm RNP 4 approved”, as appropriate, or...  “Negative RNP 10”



# Operation On Routes Within the WATRS Plus CTAs Not Requiring RNP Authorization

- **Special RNAV routes located in the airspace between Florida and Puerto Rico**
  - The old “T-routes” were re-designated as “Y-routes” on 5 June 2008
  - These special RNAV routes are not part of the WATRS Plus route structure
  - A Notice entitled “Special RNAV Routes Between Florida and Puerto Rico: Change From T-routes to Y-routes On 5 June 2008” is posted on the [WATRS Plus web page](#)
  - The Notice provides updated policy and procedures for Y-route operations

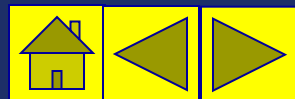


# Provisions for Accommodation of Non RNP 10 Aircraft

- The pilot shall report the lack of RNP 10 or RNP 4 status in accordance with the following:
  - when the operator/aircraft is not authorized RNP 10 or RNP 4
  - when an operator/aircraft previously granted RNP 10 or RNP 4 authorization is operating with only one operational LRNS



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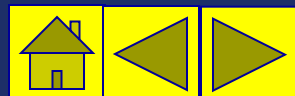


# Provisions for Accommodation of Non RNP 10 Aircraft

- **Non RNP 10 operators are able to file most WATRS Plus routes at any altitude; however, some routes may require special routing**
  - Non RNP 10 operators are cleared to operate on preferred routes and altitudes as traffic permits
  - 50 NM lateral separation is not applied to Non RNP 10 aircraft
  - Pilots of Non RNP 10 aircraft that are flight planned to operate or are operating on WATRS Plus “L” and “M” routes shall report the lack of authorization by stating “Negative RNP 10” in the:
    - Atlantic portion of the Miami Oceanic CTA
    - New York Oceanic CTA/FIR
    - New York Atlantic High Offshore Airspace
    - San Juan CTA/FIR
- **All aircraft can enhance their opportunity to be cleared on their preferred route and altitude if they operate at non-peak hours, approximately 0100 to 1100 UTC**



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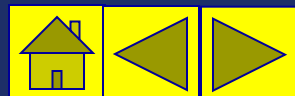


# Provisions for Accommodation of Non RNP 10 Aircraft

- **Operators of Non RNP 10 aircraft shall annotate ICAO flight plan Item 18 as follows:**
  - “STS/NONRNP10” - no space between letters and numbers
- **Notification of Non RNP 10 shall be made:**
  - on initial call to ATC
  - if approval status is requested by the controller
- **Operators of Non RNP 10 aircraft shall not annotate ICAO flight plan Item 18 (Other Information) with “NAV/RNP10” or “NAV/RNP4” if they have not obtained RNP 10 or RNP 4 authorization**



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# Flight Planning

- ICAO Flight Planning Requirements
- Required Flight Plan Addresses
- Filing to Show Domestic U.S. RNAV and Oceanic RNP Capabilities
- Filing for Westbound Flights from Europe



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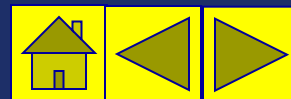


# ICAO Flight Planning Requirements

- ICAO flight plans shall be filed for operation on oceanic routes and areas in the WATRS Plus CTAs
- All flights entering the New York Oceanic CTA/FIR shall address flight plans to KZWYZOZX
- All flights entering the New York Oceanic CTA/FIR and a U.S. ARTCC (except Boston) and/or Bermuda airspace shall address flight plans to both KZWYZOZX and the appropriate U.S. ARTCC
- If operators do not address flight plans to KZWYZOZX, services may be reduced (50 NM lateral separation cannot be applied to them)



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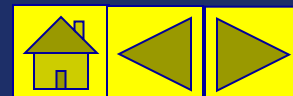
# ICAO Flight Planning Requirements

- **To inform ATC and to key Ocean21 automation that they have obtained RNP 10 or RNP 4 authorization and are eligible for 50 NM lateral separation, operators shall:**
  - Annotate ICAO Flight Plan **Item 10** (Equipment) with letters “R” and “Z”
    - “R” indicates that the aircraft will maintain the appropriate RNP navigation specification for the entire flight through airspace where RNP is prescribed
    - “Z” indicates that information explaining aircraft navigation and/or communication capability is found in Item 18
  - **And** annotate **Item 18** (Other Information) with, as appropriate, “NAV/RNP10” or “NAV/RNP4” (no space between letters and numbers)
- **50 NM lateral separation will only be applied to aircraft that annotate the ICAO flight plan in accordance with this policy**

**NOTE:** See also recommended filing practices for [domestic U.S. RNAV operations](#) and [filing with EUROCONTROL](#)



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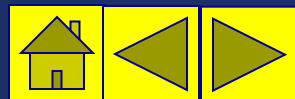


# Filing To Show Domestic U.S. RNAV and Oceanic RNP Capabilities

- On 29 June 2008, the FAA implemented a program to enhance operators' capability to communicate their domestic US RNAV capabilities to ATC by requiring an entry following the NAV/ indicator in item 18 of the ICAO flight plan
- The initiative has provisions for showing RNAV capabilities for departure ("D"), en route ("E") and arrival ("A") with RNAV accuracy values
- It is recommended that operators show their RNAV capability for domestic U.S. and capabilities for oceanic operations (RNP 10 or RNP 4) by filing:
  - "NAV/", then the domestic US alphanumeric sequence, then a mandatory space and then "RNP10" or "RNP4", as appropriate
  - Example: "NAV/RNVD1E2A1 RNP10"

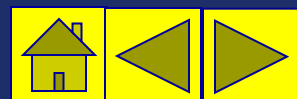


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# Filing for Westbound Flights from Europe

- **Operators should be aware of the following when filing:**
  - Alphanumeric Character Limitation. As of 27 May 2008, operators may enter up to 50 characters after the “NAV/” indicator in flight plan item 18 for flight plans filed with EUROCONTROL.
  - Multiple NAV/ Entries. If multiple “NAV/” entries appear in a flight plan filed with EUROCONTROL, **only the last “NAV/” entry will be forwarded.**
  - For example, if “NAV/D1E2A1” and “NAV/RNP10” are entered, only “NAV/RNP10” will be forwarded.
- **Item 18 entries made in accordance with the [U.S. domestic program](#) will mitigate the chance that one or the other will not be forwarded for use by FAA domestic and oceanic automation systems**

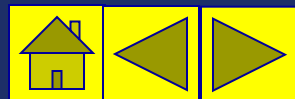


# **Flight Of Aircraft Previously Authorized RNP 10/RNP 4 With One LRNS Operational**

- **To the maximum extent possible, operators that are authorized RNP 10 or RNP 4 should operate on WATRS Plus oceanic routes in compliance with those standards**
- **If the situation warrants, however, operators may fly an aircraft on WATRS Plus oceanic routes with one LRNS operational**
- **The intent of this policy is to allow an aircraft to complete the flight to its destination and/or be flown to a location for repair**
- **For U.S. operators conducting operations under Part 121, 125 or 135 of the Code of Federal Regulations, Operations Specifications paragraph B054 (Class II (Oceanic) Navigation Using Single Long-Range Navigation System) applies**

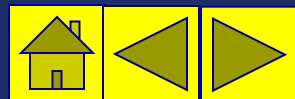


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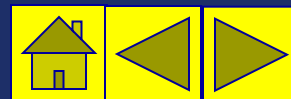
## Failure or Malfunction of LRNS Enroute, One LRNS Operational Prior to Entering a WATRS Plus CTA

- In the situation where at least two LRNS are operational at takeoff, but LRNS failure or malfunction occurs en route and only one LRNS remains operational, the pilot shall take action to inform ATC
- Approximately 175-125 NM prior to entering a WATRS Plus CTA, the pilot shall report to ATC that only one LRNS is operational and request that ATC amend the flight plan item 18 entry to delete “NAV/RNP10” or “NAV/RNP4” and enter “STS/NONRNP10”
- In addition, after entering on to a WATRS Plus oceanic route or area, the pilot shall report the “Non RNP 10” status of the aircraft



# In-flight Contingency Procedures

- In-flight contingency procedures for oceanic airspace must be emphasized in pilot training/knowledge programs
- These procedures are available from the following sources:
  - FAA Notices
  - ICAO Document 4444
  - [WATRS Plus web page](#) under “Operating Policy” in Section 2
- Published procedures are applicable to the WATRS Plus CTA reduction of lateral separation from 90 NM to 50 NM
- [LRNS Failure or Malfunction After Entry Onto WATRS Plus Oceanic Routes or Areas](#)
- [Maneuvering to Avoid Convective Weather in a 50 NM Separation Environment](#)
- [Strategic Lateral Offset Procedures \(SLOP\)](#)



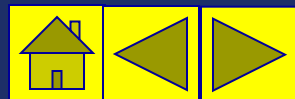
# **LRNS Failure or Malfunction After Entry Onto WATRS Plus Oceanic Routes or Areas**

- **To conduct operations as an RNP 10 or RNP 4 aircraft, at least two RNP 10 or RNP 4 authorized LRNSs shall be operational at entry on to oceanic route segments or areas in the WATRS Plus CTAs**
- **After entry on to an oceanic route segment or area within the WATRS Plus CTAs, if an LRNS fails or malfunctions and only one LRNS remains operational, the pilot shall inform ATC**
- **The aircraft may continue on the cleared route provided that, in the pilot's judgment, the remaining LRNS will enable the aircraft to be navigated within approximately 10 NM of the cleared route centerline**



# LRNS Failure or Malfunction After Entry Onto WATRS Plus Oceanic Routes or Areas

- **If, in the pilot's judgment, the aircraft cannot be navigated within approximately 10 NM of the cleared route centerline:**
  - the pilot shall advise ATC and coordinate a course of action and
  - consider the best option to maintain the safety of the operation (e.g., continuing on route or turning back)
- **Whenever possible obtain an ATC clearance before deviating from cleared route or flight level and keep ATC advised**
  - ATC will establish an alternative separation standard as soon as practicable, coordinate the safest course of action with the pilot and monitor the situation
- **If coordination with ATC cannot be accomplished within a reasonable period of time, the pilot should consider climbing or descending 500 feet, broadcasting action on 121.5 and advising ATC as soon as possible**

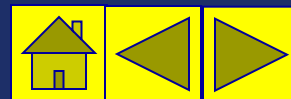


# Maneuvering to Avoid Convective Weather in a 50 NM Separation Environment

- **Pilots are required to maneuver (deviate) around convective weather on a regular basis in the course of WATRS Plus operations**
- **Weather deviation procedures, therefore, must be emphasized**
  - Pilot training/knowledge programs and operations manuals or comparable operations documents must emphasize weather deviation procedures as published in FAA Notices, ICAO Document 4444 and on the [WATRS Plus web page](#)
- **It is imperative that pilots keep ATC advised of their intentions during the initial weather avoidance maneuver and any subsequent maneuvers to avoid convective weather**
  - For distress or urgent situations, direct air/ground and ground/air SATVOICE is available for communication with New York Oceanic, San Juan Center and ARINC



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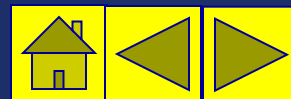


# Maneuvering to Avoid Convective Weather in a 50 NM Separation Environment

- **Pilots must be aware of the provision to climb or descend 300 feet, depending on the direction of flight and direction of deviation from track, to mitigate the chance of conflict with other aircraft when forced to deviate without a clearance**
- **It is recommended that, if equipped, the ACAS/TCAS be operational**
  - ACAS provides a valuable tool to alert the pilot to the presence and proximity of nearby aircraft in weather deviation situations



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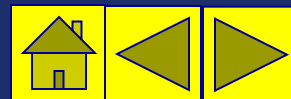


# Strategic Lateral Offset Procedures (SLOP)

- Pilots should use SLOP procedures in the course of regular oceanic operations
- SLOP procedures are published in FAA Notices, ICAO Document 4444 and on the [WATRS Plus web page](#) under Section 2 “Operating Policy”



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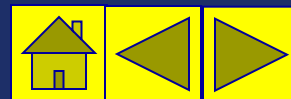


# WATRS Plus/New York Oceanic Routing Procedures

- Southbound WATRS Plus route structure access from New York Metropolitan Area
- Eastbound Transition to New York Oceanic CTA/FIR
- Northbound WATRS Plus route structure access to New York Metropolitan Area
- Special Routings for Non-RNP10 Aircraft in WATRS Plus CTAs
- **See applicable NOTAMS for New York and Miami Centers**
- **For routing questions, contact one the following specialists:**
  - New York Oceanic: Paul.Fairly@faa.gov; Ph. 1-631-468-1021
  - Miami Center: Jim.McGrath@faa.gov; Ph. 1-305-716-1592
  - San Juan Center: Jose.Arcadia@faa.gov; Ph. 1-787-253-8695
  - Jacksonville Center: Don.Musser@faa.gov; Ph 1-904-549-1553



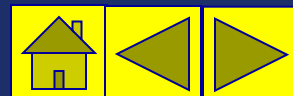
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# Southbound WATRS Plus Route Structure

## Access from New York Metropolitan Area

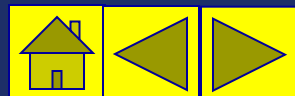
ATS ROUTE	WATRS ACCESS ROUTING (SOUTHBOUND ONLY)
For L453;	...LINND-AZEU-L453...
For L453 VIA B24;	...B24-AZEU-L453..
For L454;	...LINND-ROLLE-ATUGI-L454...
For L454 VIA B24;	...B24-WEBBB-ROLLE-ATUGI-L454...
For L455;	...LINND-RESQU-UMEDA-L455..
For L455 VIA B24;	...B24-WEBBB-RESQU-UMEDA-L455..
For L456;	...LINND-SQUAD-DARUX-L456..
For L456 VIA B24;	...B24-WEBBB-RESQU-DARUX-L456..
For L457;	...LINND-RESQU-UMEDA-L457..
For L457 VIA B24;	...B24-WEBBB-RESQU-UMEDA-L457..
For L459;	...LINND-SQUAD-DARUX-L459..
For L459 VIA B24;	...B24-WEBBB-RESQU-DARUX-L459..
For L461;	...LINND-KINGG-KINER-L461..
For L462;	...LINND-KAYYT-L462...
For L462 VIA ACK;	...ACK-J97-LACKS-KAYYT-L462...



# Southbound WATRS Plus Route Structure

## Access from New York Metropolitan Area

SIGNIFICANT POINT	COORDINATES	SIGNIFICANT POINT	COORDINATES
LINND	39 24 35.130N / 071 42 37.750W	AZEZU	37 52 28.100N / 072 22 43.200W
ROLLE	37 23 35.259N / 071 42 21.109W	ATUGI	35 38 18.475N / 071 31 36.304W
RESQU	37 28 45.872N / 071 26 49.799W	UMEDA	35 45 32.979N / 070 26 55.630W
SQUAD	38 06 48.392N / 070 27 44.915W	DARUX	36 09 35.558N / 069 27 18.311W
KINGG	38 13 15.726N / 070 15 40.015W	KINER	36 34 27.229N / 068 17 14.807W
KAYYT	38 52 37.839N / 067 34 22.287W	WEBBB	37 40 17.560N / 071 58 55.326W
ACK	41 16.91N / 070 01.60W	LACKS	40 00.01N / 068 11.96W



# Eastbound Transition to New York Oceanic CTA/FIR

- **VIA: ORF AR9 ZIBUT**

- All airspace operators transitioning the New York Center WATRS via ZIBUT intersection, en route to the New York Center North Atlantic RNP/MNPS/RVSM airspace, are encouraged to flight plan via:

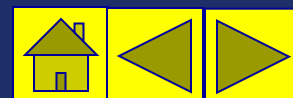
- ZIBUT [DCT] LARGE [DCT]: SLATN [or] JOBOC [or] DOVEY
- This route may be filed bi-directionally

- **Operators opting to flight plan via any other fix or latitude/longitude coordinates east of ZIBUT intersection shall expect no higher than FL290 and may be rerouted to accommodate WATRS non-radar traffic**

SIGNIFICANT POINT	COORDINATES
ZIBUT	36 56.30N / 72 40.00W
LARGE	39 17.12N / 69 18.07W
SLATN	39 07.00N / 67 00.00W
JOBOC	40 07.00N / 67 00.00W
DOVEY	41 07.00N / 67 00.00W



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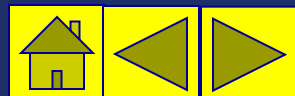


# Eastbound Transition to New York Oceanic CTA/FIR

SIGNIFICANT POINT	COORDINATES
LINND	39 24 35.130N / 071 42 37.750W
KAYYT	38 52 37.839N / 067 34 22.287W



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# Northbound WATRS Plus Route Structure

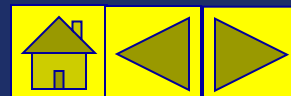
## Access to New York Metropolitan Area

- All northbound airspace users exiting New York Center's WATRS destined to New York Area airports on ATS routes L453, L454, L455, L456, L457, L459, L461 AND L462 shall flight plan and file the following transition routes to join standard airport arrival routing:

ATS ROUTE	WATRS EXIT ROUTING (NORTHBOUND ONLY)
From L453;	...AZEZU-BERGH...
From L454;	...OKONU-L454-BERGH...
From L454 TO B24;	...OKONU-L454-WEBBB-B24...
From L455;	...SAVIK-L455-BERGH...
From L455 TO B24;	...SAVIK-AZEZU-B24...
From L456;	...MARIG-BERGH...
From L457;	...OKONU-L457-BERGH...
From L457 TO B24;	...OKONU-L457-WEBBB-B24...
From L459;	...SAVIK-L459-BERGH...
From L459 TO B24;	...SAVIK-AZEZU-B24...
From L461;	...MARIG-BERGH...
From L462;	...KAYYT-BERGH...



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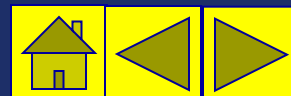




# Northbound WATRS Plus Route Structure

## Access to New York Metropolitan Area

SIGNIFICANT POINT	COORDINATES	SIGNIFICANT POINT	COORDINATES
AZEU	37 52 28.100N / 072 22 43.200W	BERGH	39 07 56.840N / 072 03 05.680W
OKONU	37 17 21.273N / 071 57 54.219W	WEBBB	37 40 17.560N / 071 58 55.326W
SAVIK	37 42 41.536N / 070 59 01.760W	MARIG	38 19 42.402N / 070 03 34.262W
KAYYT	38 52 37.839N / 067 34 22.287W		

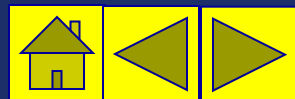


# Special Routings for Non-RNP10 Aircraft in WATRS Plus CTAs

- **On a limited number of WATRS Plus routes, non-RNP10 aircraft will need to file and fly special routings**
  - For 10 routes, on average the special routing will be approximately 20 NM longer
  - For 3 routes, the routing will be on average 13 NM shorter
  - One routing from WATRS Plus route M329 will be 64 NM longer; however these aircraft may opt to fly on M328 or M330 to avoid the longer routing
- **The need for Non-RNP 10 routings was generated by an unforeseen ground automation issue related to the necessity to apply a 90 NM lateral separation standard to Non-RNP 10 aircraft**
- **The FAA is working, as a high priority, on procedural and automation solutions to mitigate the need for Non-RNP 10 aircraft routings**



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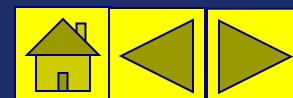


# Special Routings for Non-RNP10 Aircraft in WATRS Plus CTAs

WATRS Plus Route	Standard WATRS Plus Routing	NonRNP 10 Aircraft Reroute	*Miles Diff	Projected Monthly Reroute Use
L451	ILIDO-L451-LETON-L450-GTK	ILIDO-LNHOM-L452-GTK	Net diff. of +7	10
L451	ILIDO-L451-SKYLE	ILIDO-LNHOM-L452-SKYLE		
L454	GRAMN-L454-ELMUC	GRAMN-LAMER-CERDA-ELMUC	+26	1
L455	RESCU-UMEDA-L455-LENNTDDP	SQUAD-DARUX-L456-THANK-DDP	+33	16
M201	PAEPR-M201-CARAC-LOMPI	PAEPR-MUNEY-M202-LOMPI	+12	0
M202	CARPX-UKOKA M202-ONGOT	CARPX-JAINS-ONGOT	+2	2
M203	NUCAR SNAGY M203 LEXIM	NUCAR - 29 09N / 076 42W LEXIM	-4	0
M204	NUCAR SUMRS M204 ELEBA	NUCAR - 29 09N / 076 42W ELEBA	+3	0



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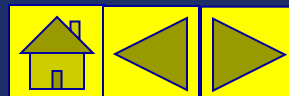


# Special Routings for Non-RNP10 Aircraft in WATRS Plus CTAs

WATRS Plus Route	Standard WATRS Plus Routing	NonRNP 10 Aircraft Reroute	*Miles Diff	Projected Monthly Reroute Use
M327	NUCAR SUMRS M327 KANUX	NUCAR - 29 09N / 076 42W KANUX	+8	10
M329	EXTER M329 BOREX	EXTER CNNOR BOREX	+20	2
M330	MLSAP MILLE M330 RUDLI	MLSAP 26 47N / 073 38W RUDLI	+1	1
M331	AVNEY CANEE M331 OLEDU	AVNEY 26 47N / 073 38W OLEDU	+37	0
M593	EXTER M329 GRATX M593 RUDLI	EXTER CNNOR RUDLI	+13	0
M596	MUSSH MILLE M330 RABAL	MUSSH 26 47N / 073 38W RABAL	-7	0



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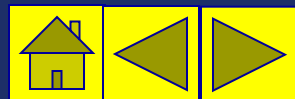


# Special Routings for Non-RNP10 Aircraft in WATRS Plus CTAs

- **For questions on WATRS Plus routings for Non-RNP10 aircraft in individual centers, please contact one of the specialists below:**
  - New York Oceanic: [Paul.Fairly@faa.gov](mailto:Paul.Fairly@faa.gov); Ph. 1-631-468-1021
  - Miami Center: [Jim.McGrath@faa.gov](mailto:Jim.McGrath@faa.gov); Ph. 1-305-716-1592
  - San Juan Center: [Jose.Arcadia@faa.gov](mailto:Jose.Arcadia@faa.gov); Ph. 1-787-253-8695
  - Jacksonville Center: [Don.Musser@faa.gov](mailto:Don.Musser@faa.gov); Ph 1-904-549-1553



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# Special RNAV Routes Between Florida and Puerto Rico: “Y-Routes”

- In 1999, the FAA’s Southern Region developed a Special RNAV route structure to better serve the user community that flies between Florida and Puerto Rico
- The objective is to capture the benefits that Global Navigation Satellite Systems (GNSS) and other approved RNAV systems provide by enabling aircraft to navigate on direct point-to-point routes
- These special routes augment the existing conventional airway system and stand as the foundation toward increased efficiency in air traffic management and decreased operating costs for users



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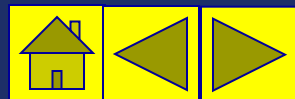


# Y-Routes: Policy and Procedures

- **Y-Routes will remain “special” routes and will not be charted on U.S. government aeronautical charts**
- **Normally these routes operate under radar surveillance; however, under the conditions detailed below, the routes may continue to operate using non-radar procedures during periods of temporary air traffic control (ATC) radar outage**



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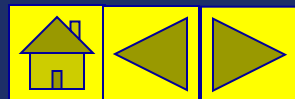


# Y-Routes: Policy and Procedures

- **The decision to continue RNAV route operation in non-radar situations is based on an evaluation of communications, navigation and surveillance (CNS) factors:**
  - Direct controller–pilot communications via VHF radio is available
  - Aircraft RNAV systems are approved for Instrument Flight Rules (IFR) operation in accordance with existing FAA regulations and Advisory Circulars (ACs)
  - An operational Traffic Alert and Collision Avoidance System (TCAS) is required for commercial operators to dispatch for flight when the Y-Routes are not operating under radar surveillance
    - Air Traffic Control will notify operators that applicable ATC radar is inoperative as soon as possible
  - Pilot requests for track deviations to avoid convective weather and for aircraft contingencies or emergencies will be managed in accordance with existing ATC procedures



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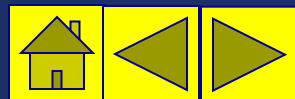


# Y-Routes: Operational Approval

- **Operations on the Y-Routes will continue to be categorized as [Class I Navigation](#)**
- **Operations Specifications**
  - Operators are considered eligible to conduct operations on the Y-Routes provided that aircraft are equipped with the appropriate [equipment](#)
- **Title 14 CFR Parts 121, 125, 135 operators:**
  - Authorized to operate on the Y-Routes when they are issued OpSpecs paragraph B034 (Class I Navigation Using Area Navigation Systems)
  - OpSpecs B034 must be annotated in OpSpecs paragraph B050 (Enroute Authorizations, Limitations and Procedures), for the Caribbean Sea area of operations
- **Title 14 CFR Part 91 Operators:**
  - Must review their Airplane Flight Manual (AFM) and verify that the aircraft RNAV system has been approved and installed in accordance with one of the FAA Advisory Circulars [listed](#)
  - If the operator is unable to verify that the AFM shows that the aircraft RNAV system is appropriately approved, then it should contact the local Flight Standards District Office (FSDO) for help in determining eligibility.
  - A specific Letter of Authorization is not required



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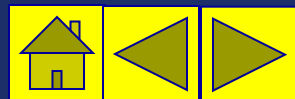


# Y-Routes: Operator Determination of RNAV Equipment Eligibility

- **Details of RNAV equipment eligibility are available in the following FAA Advisory Circulars:**
  - [AC 90-45A](#) (Approval of Area Navigation Systems for use in the U.S National Airspace System)
  - [AC 20-121A](#) (Airworthiness Approval of LORAN-C Navigation Systems for use in U.S. National & Airspace System (NAS) and Alaska)
  - [AC 20-130A](#), as amended (Airworthiness Approval of Navigation or Flight Management Systems Integrating Multiple Navigation Sensors)
  - [AC 25-15](#) (Approval of Flight Management Systems in Transport Category Aircraft)



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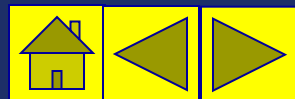


# Y-Routes: Operational Requirements and Procedures

- **Pilots in command (PIC) filing a Y-Route are certifying that the crew is qualified and the aircraft equipment meets the requirements to conduct RNAV operations**
- **Pilots in command are responsible for the following:**
  - navigating along the centerline (as defined by the aircraft navigation systems) in accordance with the requirements of 14 CFR Part 91.181 (course to be flown) and ICAO Annex 2, Paragraph 3.6.2.1.1.
  - Notifying the Miami ARTCC or San Juan CERAP of any loss of navigation capability that affects the aircraft's ability to navigate within the lateral limits of the route
  - Have and use an en route chart that identifies the Y-Routes and their waypoints



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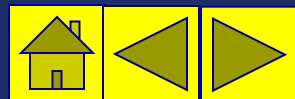


# Y-Routes: Operational Requirements and Procedures

- For the purpose of Y-Route operation, on routes where Inertial Navigation Systems (INS) or Inertial Reference Systems(IRS) cannot receive automatic position updates (e.g., DME/DME update) for the entire length of the route, aircraft are limited to 1.5 consecutive hours of un-updated operation
- In preparation for take-off, this time starts when the INS or IRS is placed in the navigation mode
- En route, the maximum time allowed between automatic position updates is 1.5 hours
- Systems that perform position updating after the pilot has manually selected the navigation aid are considered to have “automatic update” capability

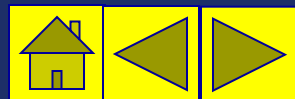


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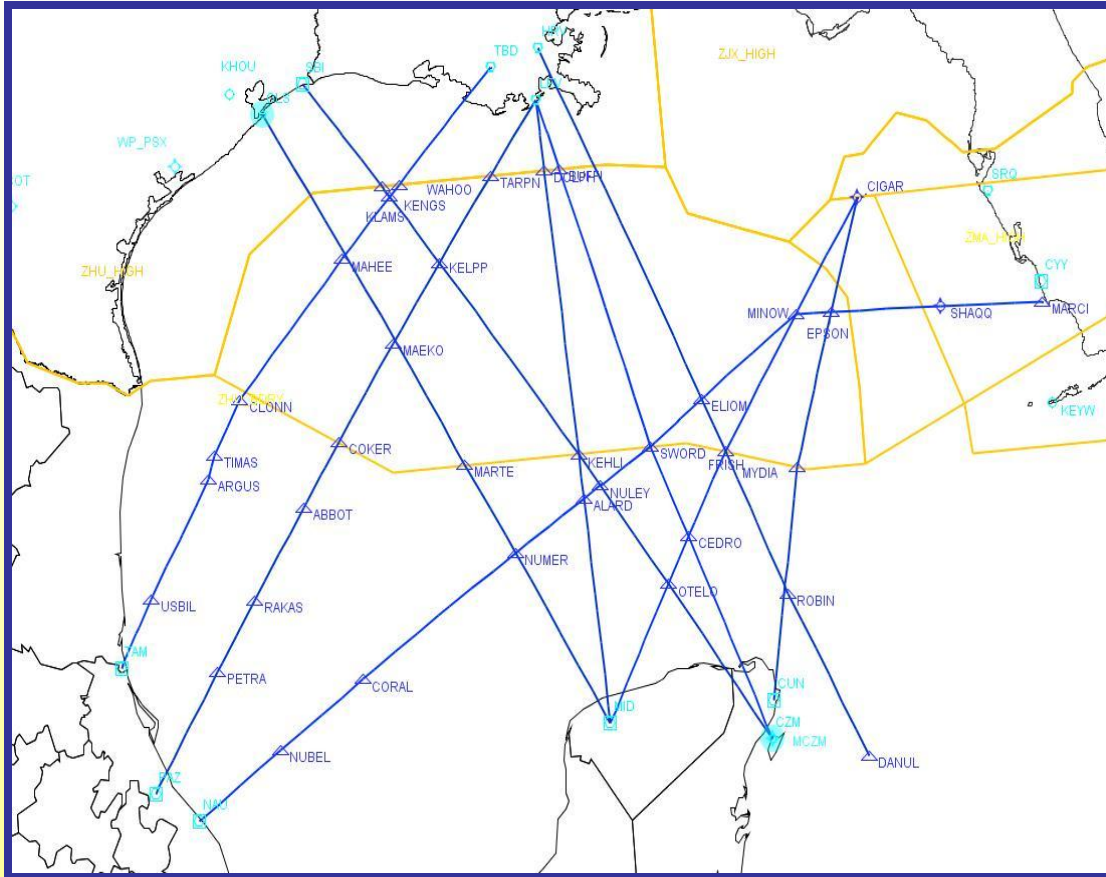


# Y-Routes: Operational Requirements and Procedures

- **Radar monitoring will normally be provided**
- **In the event of a loss of radar, the flight crew will be advised**
  - Air traffic control (ATC) will ensure that the appropriate non-radar separation is applied during these time periods
- **Waypoints shall be identified as compulsory or non-compulsory reporting points**
- **When the ARTCC/CERAP is providing radar service, the operator shall report compulsory points only when requested**
- **In accordance with ICAO documents, routes are identified as Y-Routes and all waypoints/fixes are pronounceable five letter names**



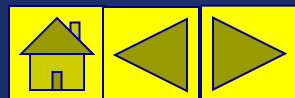
# Gulf of Mexico Operations



- Oceanic Sectors
- Traffic Flows
- RVSM Policy and Procedures
- Strategic Lateral Offset Procedures
- Communications Requirement in the Houston OCTA
- RNAV Routes Q100, Q102, and Q105

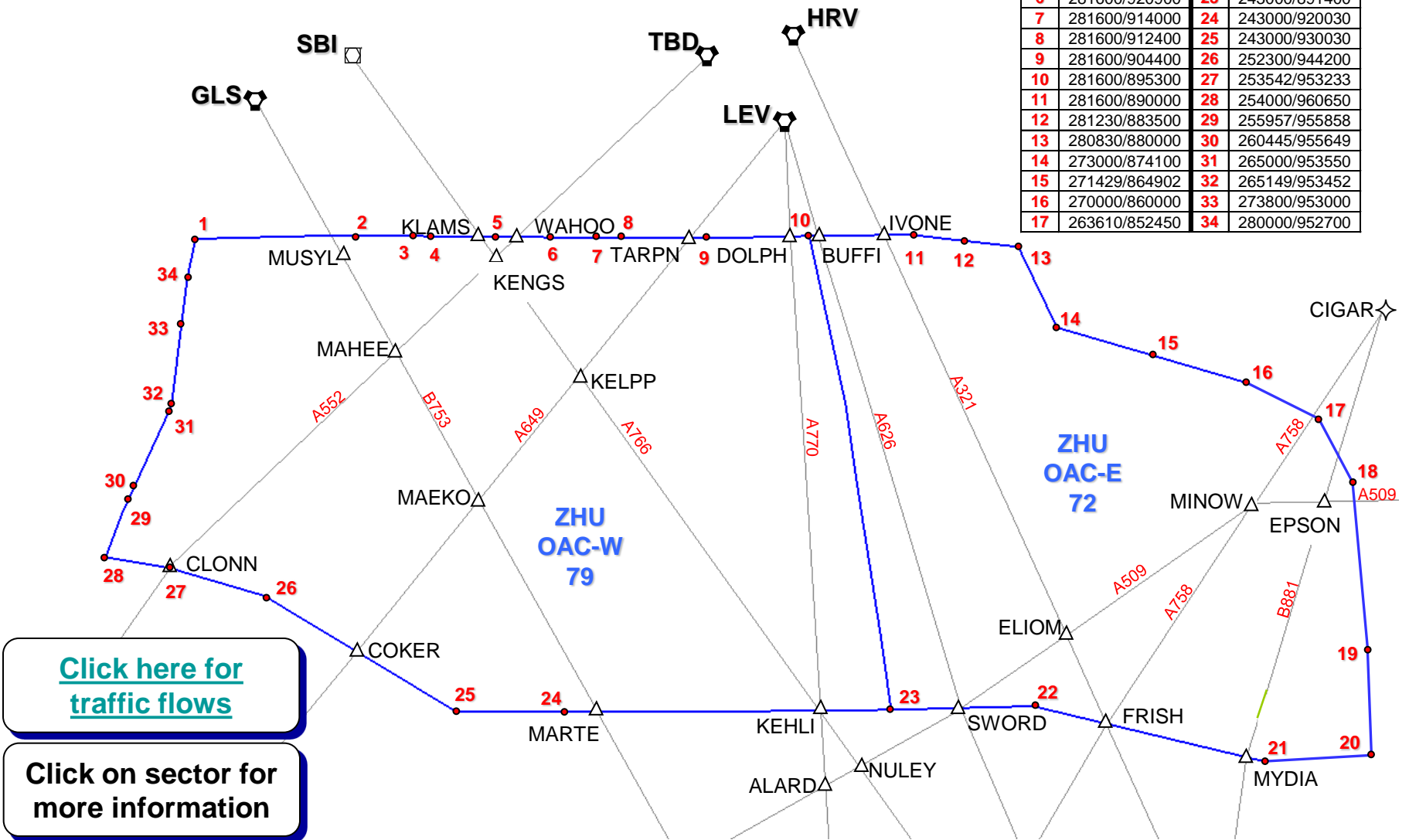


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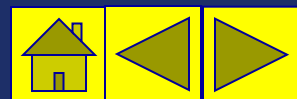


# Gulf of Mexico Oceanic Sectors

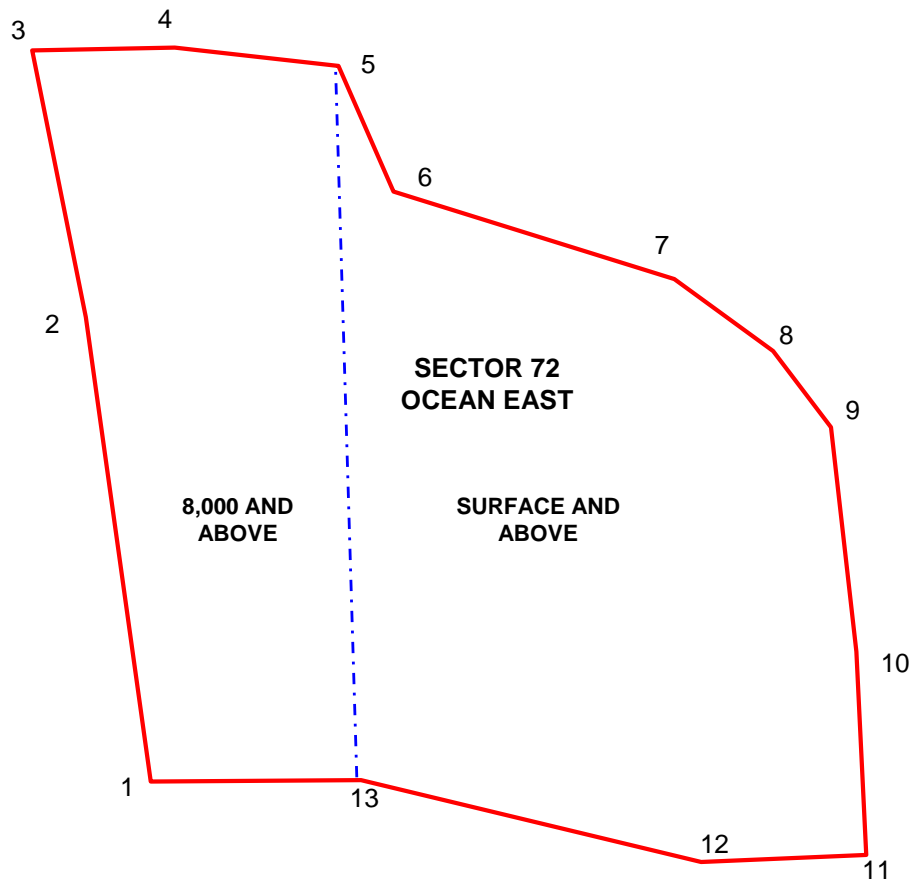
1	281220/952420	18	261200/850530
2	281600/940030	19	250201/845959
3	281600/933800	20	240000/845959
4	281600/932800	21	240000/860000
5	281600/924100	22	243000/880000
6	281600/920900	23	243000/891400
7	281600/914000	24	243000/920030
8	281600/912400	25	243000/930030
9	281600/904400	26	252300/944200
10	281600/895300	27	253542/953233
11	281600/890000	28	254000/960650
12	281230/883500	29	255957/955858
13	280830/880000	30	260445/955649
14	273000/874100	31	265000/953550
15	271429/864902	32	265149/953452
16	270000/860000	33	273800/953000
17	263610/852450	34	280000/952700



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# Sector 72: Ocean East (OCNE)



## Boundaries & Frequencies

The Ocean East sector is a high/low sector that encompasses a large expanse of airspace overlying the Gulf of Mexico. The lateral boundary runs from sixty to seventy miles off the coast of Leeville along the Jacksonville and Miami Center boundaries down to latitude 2425N and back north to Leeville.

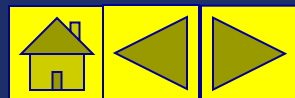
The OCNE sector is designed to control traffic flow employing nonradar separation rules set forth in Chapter 8 of the 7110.65. Traffic flow is generally restricted to airways which, for simplification, run north/south from Leeville to the Yucatan Peninsula crossing those running from south Florida southwest to the Yucatan and beyond. The sector includes AR-646, AR-108E/W, AR-103 and various other military operations described in letters of agreement.

The OCNE sector is combined on VUH sector for the midnight configuration.

The OCNE sector normally uses the OAC or the OACFIX map.

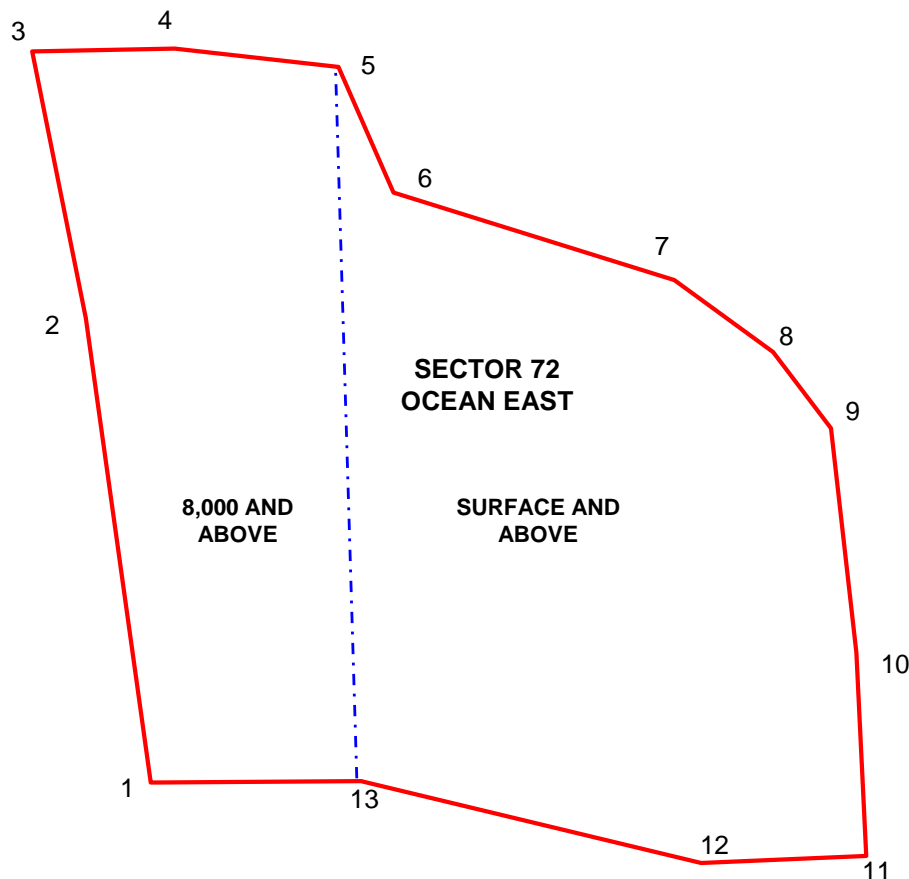


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# Sector 72: Ocean East (OCNE)



## Sector Description

## Boundaries

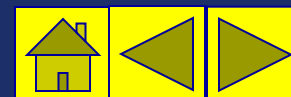
1: 243000/0891400	2: 265500/0893500	3: 281600/0895300
4: 281600/0890000	5: 280830/0880000	6: 273000/0874100
7: 270000/0860000	8: 263610/0852450	9: 261200/0850530
10: 250201/0845959	11: 240000/0845959	12: 240000/0860000
13: 243000/0880000		

## Frequencies

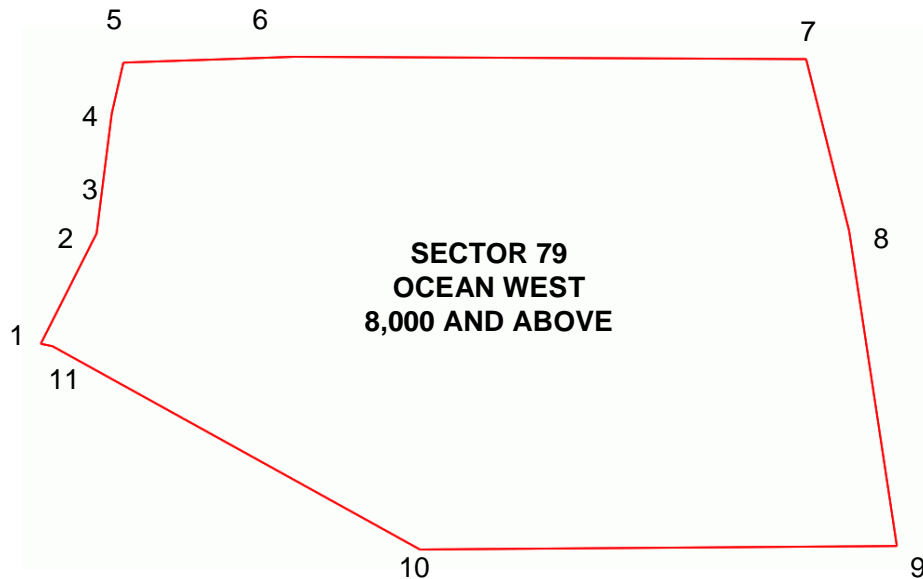
RCAG	FREQ		BUEC
	VHF	UHF	
EYW	135.77	~~~	~~~
GNI	135.77	251.05	~~~
MMUN	135.77	~~~	~~~
TZL	135.77	251.05	~~~
VEC-LA	135.77	~~~	~~~
VNC-FL	135.77	251.05	~~~



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# Sector 79: Ocean West (OCNW)



## Boundaries & Frequencies

The Ocean West sector is a high/low sector that encompasses a large expanse of airspace overlying the Gulf of Mexico. The lateral boundary runs from seventy to eighty miles off the coast of Brownsville paralleling the U.S. coast to sixty to seventy miles off the coast of Leeville and then down to latitude 2425N and back to Brownsville.

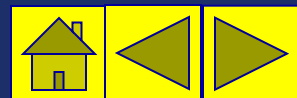
The OCNW sector is designed to control traffic flow employing nonradar separation rules set forth in Chapter 8 of the 7110.65. Traffic flow is generally restricted to the airways which, for simplification, run from GLS to the Yucatan Peninsula and GNI to the Yucatan Peninsula crossing those running from GNI to Tampico, Mexico. The sector includes all or portions of W-59A-C, W-147A, D, and E, W-602, W-92, and AR-108E/W.

The OCNW sector is combined on VUH sector for the midnight configuration.

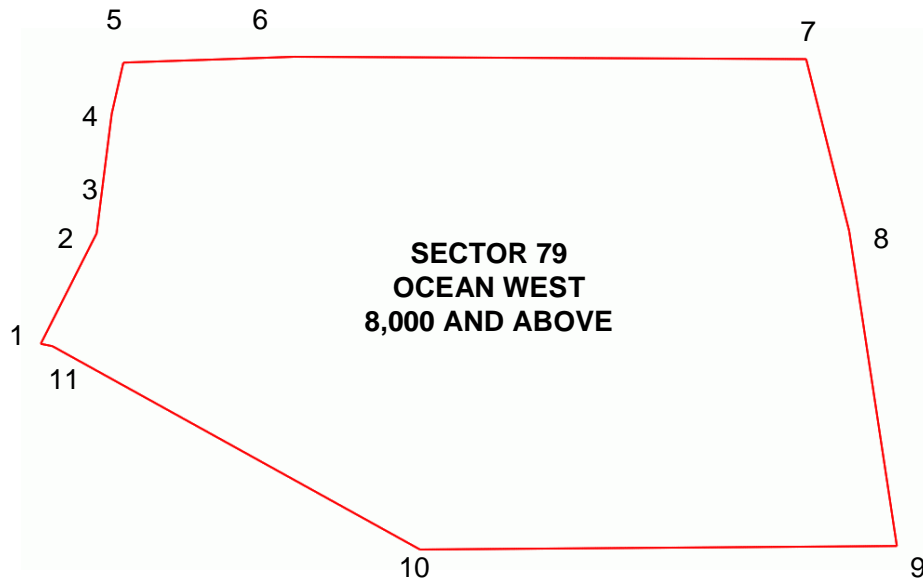
The OCNW sector normally uses the OAC or the OACFIX map.



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# Sector 79: Ocean West (OCNW)



## Boundaries

1: 255957/0955858	2: 265149/0953452	3: 273800/0953000
4: 280000/0952700	5: 281220/0952420	6: 281600/0940030
7: 281600/0895300	8: 265500/0893500	9: 243000/0891400
10: 243000/0930030	11: 260000/0955500	

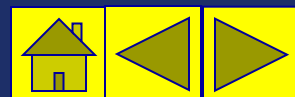
## Frequencies

RCAG	FREQ		BUEC
	VHF	UHF	
GNI	132.65	~~~	~~~
QCM	132.65	~~~	~~~
QHI	132.65	269.55	~~~
GLS	132.65	269.55	~~~
MMID	132.65	~~~	~~~

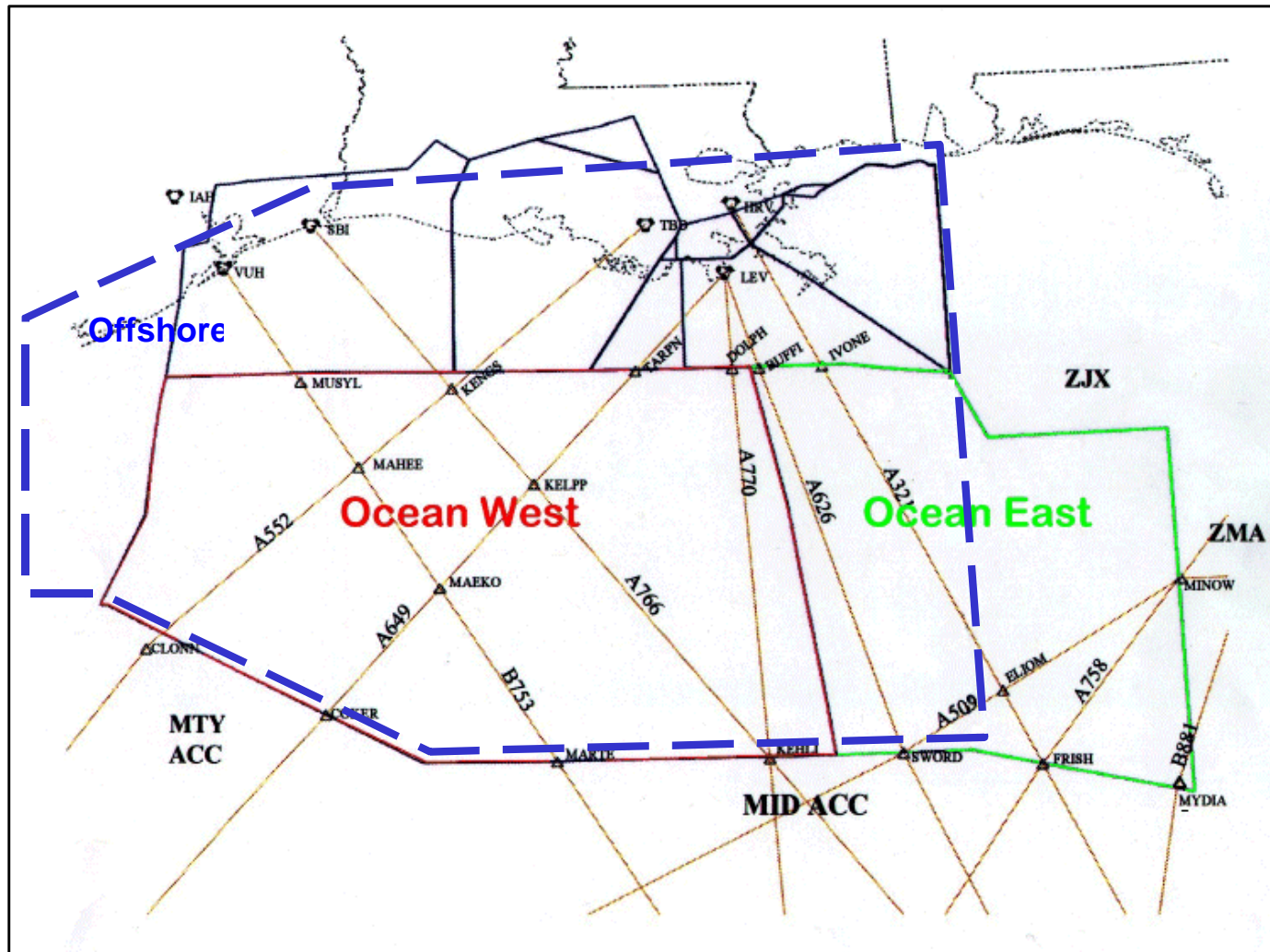
[Sector Description](#)



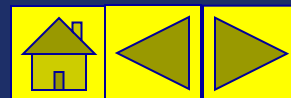
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# Gulf of Mexico Traffic Flows



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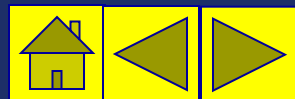


# RVSM Policies and Procedures for the Gulf of Mexico

- **Operational Policy/Procedures for RVSM in the Domestic U.S., Alaska, Offshore Airspace and the San Juan FIR are posted on the [FAA RVSM Documentation](#) web page in the “Domestic U.S. RVSM” section of “Area of Operations Specific Information”**
  - This Notice provides RVSM policies and procedures that are applicable in Gulf of Mexico High and Atlantic High Offshore airspace and other airspace under FAA air traffic control
- **Pilots must be aware of the air traffic services available to them and follow procedures and guidance appropriate to the services available**
- **In contingency situations, it is recognized that ultimately pilot judgment will determine the actions to be taken in specific circumstances and areas**



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# **Application Of The Strategic Lateral Offset Procedure in Gulf of Mexico Oceanic Airspace**

- **The offset procedure can be used as standard operating practice to mitigate both wake vortex encounters and to mitigate the heightened risk of collision when non-normal events occur (e.g., operational altitude deviation errors and turbulence induced altitude deviations)**
- **Pilots should apply an offset outbound once ATC terminates radar service or reports that radar contact is lost**
- **Pilots must return to centerline or request ATC clearance to remain offset once radar contact is re-established**
- **Aircraft capable of being programmed with automatic offsets may fly the centerline or offset one or 2 NM right of centerline to obtain lateral spacing from nearby aircraft**
- **Offsets are not to exceed 2 NM right of centerline**



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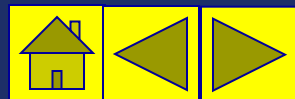
# Application Of The Strategic Lateral Offset Procedure in Gulf of Mexico Oceanic Airspace

- Aircraft without automatic offset programming capability must fly the centerline
- Any aircraft overtaking another aircraft is to offset within the confines of this procedure, if capable, so as to create the least amount of wake turbulence for the aircraft being overtaken
- For wake turbulence purposes, pilots are never to offset to the left of centerline nor offset more than 2 NM right of centerline
- There is no ATC clearance required for this procedure and it is not necessary that ATC be advised
- Voice position reports are to be based on the current ATC clearance and not the exact coordinates of the offset position

**NOTE:** It is recognized that the pilot will use his/her judgment to determine the action most appropriate to any given situation and has the final authority and responsibility for the safe operation of the aircraft. The use of air-to-air channel, 123.45, may be used to coordinate the best wake turbulence offset option.



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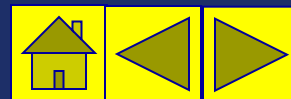


# Communications Requirements and Position Reporting within Houston Oceanic Control Area

- **Communication requirements for IFR flights within the Houston Oceanic Control Area are:**
  - Functioning two-way radio communications equipment capable of communicating with at least one ground station from any point on the route
  - Maintaining a continuous listening watch on the appropriate radio frequency
  - Reporting mandatory points
- **The following area in the Houston CTA/FIR does not have reliable VHF air-to-ground communications below FL180:**
  - 26 30 00N 86 00 00W TO 26 30 00N 92 00 00W
  - TO 24 30 00N 93 00 00W TO 24 30 00N 88 00 00W
  - TO 24 00 00N 86 00 00W TO BEGINNING POINT.
- **Communications within this area are available for all oceanic flights via HF**



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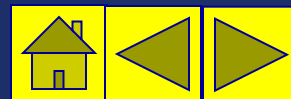


# RNAV Routes Equipment Eligibility

- Aircraft may be considered eligible to operate on these routes if they fall under one of the following categories:
- The Airplane Flight Manual shows that the navigation system installation has received airworthiness approval in accordance with one of the following FAA Advisory Circulars:
  - [AC 90-45A](#) (Approval of Area Navigation Systems for use in the U.S National Airspace System)
  - [AC 20-121A](#) (Airworthiness Approval of LORAN-C Navigation Systems for use in U.S. National & Airspace System (NAS) and Alaska)
  - [AC 20-130A](#), as amended (Airworthiness Approval of Navigation or Flight Management Systems Integrating Multiple Navigation Sensors)
  - [AC 25-15](#) (Approval of Flight Management Systems in Transport Category Aircraft)
- The aircraft qualify for the /E, /G, /R, /J, /L, or /Q equipment suffix, as defined in the Aeronautical Information Manual (AIM)



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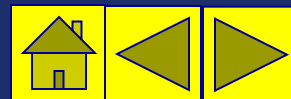


# RNAV Routes (Q100, Q102, Q105)

- Only aircraft approved for IFR Area Navigation operations will be cleared to operate on Q100, Q102, and Q105 between the surface and FL600 (inclusive)
- In accordance with Federal Aviation Regulations 91.511, 121.351, 125.203, and 135.165 (as applicable) an approved Long-Range Navigation System (INS, IRS, GPS or Loran C) is required for operation on these routes
- In addition, operators will not flight plan or operate on these routes unless their aircraft are equipped with RNAV systems that are approved for IFR navigation and the pilots are qualified to operate them
  - [Equipment eligibility](#)
  - [Operations requirements and procedures](#)



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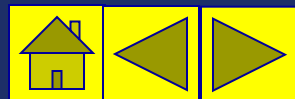


# RNAV Route Operational Requirements and Procedures

- **Pilots in command filing on RNAV routes shall:**
  - Certify that the crews and equipment are qualified to conduct RNAV operations
  - Be responsible for navigating along route centerline as defined by the aircraft navigation system in accordance with Title 14 [CFR 91, section 181](#) and ICAO Annex 2
  - Notify the Air Route Traffic Control Center of any loss of navigation capability that affects the aircraft's ability to navigate within the lateral limits of the route
- **Radar monitoring will normally be provided. In the event of loss of radar, aircraft will be advised**
  - ATC will ensure that the appropriate non-radar separation is applied during these time periods



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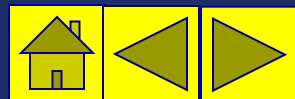


# Flight Plan Verification

- **All aircraft transitioning through San Juan FIR/CTA from a foreign facility that will operate in MNPS airspace shall forward the full route of flight for flight plan verification**
- **This shall be accomplished prior to exiting the San Juan FIR/CTA, by one of the following means:**
  - Via Direct pilot-controller communication.
  - Via ARINC, when requested by ATC.
- **This requirement does not apply to aircraft operating in non-MNPS airspace**



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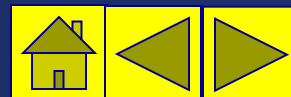


# Miami FIR Comm and Surveillance Procedures

- Aircraft Entering the Miami CTA/FIR from Havana FIR at and above FL240
- Aircraft Entering the Miami CTA/FIR from Havana FIR below FL240
- Aircraft Entering the Miami CTA/FIR from Port au Prince or Santo Domingo
- Radar Separation



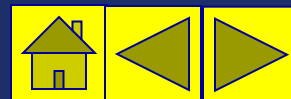
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# Aircraft Entering the Miami CTA/FIR from Havana FIR below FL240

- **Aircraft on IFR flight plans entering the Miami CTA/FIR below FL240 from the Havana CTA/FIR are requested to establish communication with Miami ARTCC 10 minutes prior to the Miami Oceanic CTA/FIR boundary (at 2400N long) on the following frequencies:**

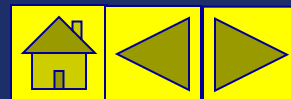
– B646(CANOA), G765 (MAXIM)	132.2 VHF/323.1 UHF
– G448(TADPO)	124.75 VHF/291.725 UHF
– R628(TANIA), A301(URSUS), B760	135.6 VHF/269.05 UHF
– G437(DYNAH)	125.7 VHF/307.9 UHF
– B503(ENAMO), UM595(ERRCA)	127.22 VHF/239.02 UHF
– UM331(GHANN), G629(OVALU)	123.775 VHF/256.8 UHF



# Aircraft Entering the Miami CTA/FIR from Havana FIR Above FL240

- **Aircraft on IFR flight plans entering the Miami CTA/FIR below FL240 from the Havana CTA/FIR are requested to establish communication with Miami ARTCC 10 minutes prior to the Miami Oceanic CTA/FIR boundary (at 2400N long) on the following frequencies:**

– B646(CANOA), G765 (MAXIM)	132.2 VHF/323.1 UHF
– G448(TADPO)	124.75 VHF/291.725 UHF
– R628(TANIA), A301(URSUS), B760	126.325 VHF/257.2 UHF
– G437(DYNAH)	127.22 VHF/239.02 UHF
– B503(ENAMO), UM595(ERRCA)	127.22 VHF/239.02 UHF
– UM331(GHANN), G629(OVALU)	123.775 VHF/256.8 UHF

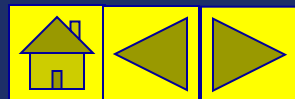


# Aircraft Entering Miami CTA/FIR from Port au Prince or Santo Domingo

- Aircraft on IFR flight plans entering Miami CTA/FIR from Port Au Prince or Santo Domingo CTA/FIR are required to contact Miami ARTCC at least 10 minutes prior to reaching the Miami CTA/FIR boundary for ATC clearance



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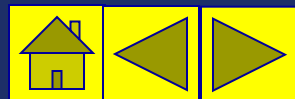
# Radar Separation

- **Miami ARTCC is utilizing a secondary radar system from an antenna located on the island of Grand Turk, British West Indies**
  - IFR aircraft within 200 NM of the antenna above FL240 can expect radar separation from other IFR aircraft
- **Miami ARTCC is also utilizing a secondary radar system from an antenna located on the New Providence Island, Nassau, Bahamas**
  - IFR aircraft within 200 NM of the antenna above FL240 can expect radar separation from other IFR aircraft
- **Above FL240, some overlap occurs in radar coverage between the Nassau and Grand Turk systems, and between the Grand Turk and Pico Del Este, Puerto Rico, systems**

**NOTE:** Radar air traffic service will be provided below FL240 to those participating aircraft within the antenna coverage



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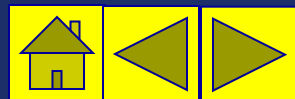


# Radar Separation

- **Since radar separation is dependent upon the receipt of transponder returns, all aircraft within antenna coverage of either system are required to squawk transponder codes as assigned by ATC, or, if none assigned, squawk the appropriate stratum code**
  - Aircraft departing and overflying the Santo Domingo and Port Au Prince FIRs can expect ATC assigned codes from those agencies
  - If a code is not assigned by either Santo Domingo or Port Au Prince, pilots should request a code
  - The assigned codes should be squawked prior to crossing the Miami CTA/FIR boundary north or west bound



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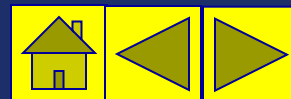
# Flight Planning

- **In an effort to eliminate erroneous or duplicate flight plans and to increase the safety of flight within the Miami and San Juan CTA/FIRs, operators shall adhere to the following procedures when filing flight plans for flights departing from foreign aerodromes entering the United States:**
  - All changes to an IFR flight must be submitted as soon as possible to the ATC unit having authority for the departure aerodrome
  - Change/Modification (CHG) or Cancel (CNL) messages must be sent PRIOR to submitting a current or new flight plan
- **The Repetitive Flight Plan/Bulk Storage Program (RPL) with Miami Center/San Juan CERAP has been cancelled.**
- **Scheduled and or Unscheduled Flight Plans should be filed with Lockheed Martin Flight Services (LMFSS).**
- **Operators should be aware that scheduling of flight plans may require a Letter of Agreement with LMFSS.**

**NOTE:** Questions should be posed to the Miami Center Operations Office at 1-305-716-1530



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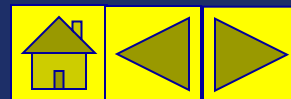
# Atlantic International Working Groups

- [ICAO Separation and Airspace Safety Panel \(SASP\)](#)
- [North Atlantic System Planning Group](#)
  - [NAT Implementation Management Group](#)
  - [NAT Safety Oversight Group](#)
  - [NAT ATM Group](#)
  - [NAT Communication Navigation and Surveillance Group](#)
- [GREPECAS](#)
  - [Directors General of Civil Aviation of the Eastern Caribbean](#)
  - [Directors General of Civil Aviation of the Central Caribbean](#)

**NOTE:** Further questions regarding these meetings should be posed to the FAA ATO International Office at +1 202 385 8132



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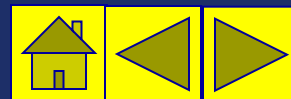
# Pacific International Working Groups

- ICAO Separation and Airspace Safety Panel (SASP)
- Trans-Regional Airspace and Supporting Air Traffic Management Systems Steering Group (TRASAS)
- Asia Pacific Air Navigation Planning and Implementation Regional Group
  - ATM/AIS/SAR Subgroup
  - Regional Airspace Safety Monitoring Advisory Group
- Informal Pacific ATC Coordinating Group
- Informal South Pacific ATS Coordination Group
- Cross Polar and Trans East ATM Providers' Working Group
- Oceanic Work Group

**NOTE:** Further questions regarding these meetings should be posed to the FAA ATO International Office at +1 202 385 8132



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# ICAO Separation and Airspace Safety Panel (SASP)

- **Objective**

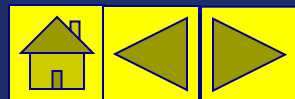
- To undertake specific studies, as approved by the Air Navigation Commission (ANC) and reflected in the work program of the panel, with a view to advising the ANC on technically practical and operationally feasible ICAO provisions

- **Work Program**

- Harmonized use & exchange of RVSM monitoring data among RMAs
- 2.5 in--trail separation on final up to 20 miles from runway end
- MLAT ADS--B for 3NM separation minima
- More stringent speed controls in oceanic airspace
- PANS--OPS criteria for terminal separation minima
- GNSS (DME 10) separation in oceanic airspace
- Micro offsets (100 meter increments) as a next step of SLOP
- In--trail climb using ADS-B & CPDLC
- Surveillance capability extended to wide area multi-lateration systems



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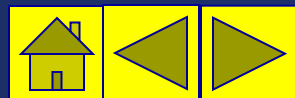
# Trans-Regional Airspace and Supporting Air Traffic Management Systems Steering Group (TRASAS)

- **Objective**

- Co-ordinate the requirements of international civil aviation for a coherent and economically viable and operationally optimal structure of ATS routes, linking city-pairs in Europe and Asia, Europe and North America and Asia and North America



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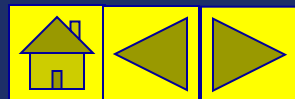


# North Atlantic Systems Planning Group (NAT SPG)

- **Objective**
  - To maintain and, where possible, improve the agreed safety standards in all activities supporting the provision of air navigation services in the North Atlantic Region
- **Web site**
  - [NAT SPG Handbook](#)



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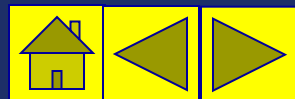
# North Atlantic Safety Oversight Group (NAT SOG)

- **Objectives**

- Review system safety performance in the NAT Region
- Share data on safety-related occurrences in the NAT Region
- Develop best practices in the management of safety in the NAT Region
- Ensure safety-related occurrences in the NAT Region are analysed by the appropriate NAT SPG contributory groups to determine root causes
- Identify areas where mitigation is required and/or identify specific mitigation activities
- Keep under review safety monitoring methods and analysis and recommend improvements to the process as appropriate



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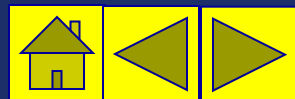


# North Atlantic Safety Oversight Group (NAT SOG)

- Monitor safety cases in progress and review completed safety cases prepared to support changes to the NAT air navigation system
- Address other safety-related issues as necessary
- **Web site**
  - [NAT SPG Handbook](#)



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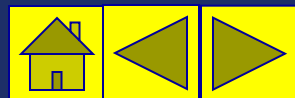
# North Atlantic Implementation Management Group (NAT IMG)

- **Objectives**

- Support the objective of, and abide by the guiding principles of, the NAT SPG Safety Policy whilst carrying out its own activities and directing the activities of its implementation working groups
- Develop and manage the NAT Services Development Roadmap, which identifies priorities and sets out timetables with associated milestones
- Identify, detail and recommend allocation of tasks and resources required to fulfil the NAT Implementation Plan
- Assess the cost-effectiveness of the elements of the NAT Implementation Plan
- Approve or amend the terms of reference of NAT implementation working groups and to direct their work programmes



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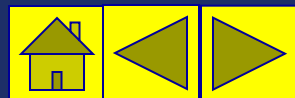


# North Atlantic Implementation Management Group (NAT IMG)

- Ensure the necessary co-ordination and/or consultation with NAT Provider States, other States, NAT Users and appropriate International Organizations
  - Propose to the NAT SPG amendments to the Air Navigation Plan, the Facilities and Services Implementation Document and the Nat Implementation Strategy
  - Seek guidance from the NAT SPG on issues that the Group cannot resolve
- **Web site**
    - [NAT SPG Handbook](#)



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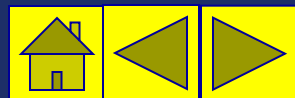
# North Atlantic Air Traffic Management Working Group (NAT ATMG)

- **Objectives**

- Seeks approval from the NAT IMG for proposed changes to the NAT Region air navigation documentation
- Identify and propose remedial action for shortcomings and deficiencies
- Develop procedures to support the implementation of planned CNS/ATM initiatives
- Develop procedures for the application of agreed reductions in separation minima in the NAT Region
- Keep under review the Application of Separation Minima (North Atlantic Region) document and address outstanding issues
- Keep under review detailed operational requirements for ATS AIDC messages in support of ATM



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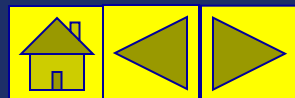


# North Atlantic Air Traffic Management Working Group (NAT ATMG)

- Take into account, and develop as required, NAT Region requirements for ATFM in harmonisation with ATFM developments in the Caribbean, European and North America Regions
  - Take into account, and develop as required, NAT Region requirements for civil/military coordination
  - Establish the requirements for harmonisation of Flight Data Processing Systems within the NAT Region.
  - Determine the future operational requirements for Airspace Management in the NAT Region.
  - In close cooperation with the NAT CNSG, determine the ATM procedures for the implementation of CNS in the NAT Region.
  - Co-ordinate the development of contingency plans
- **Web site**
    - [NAT SPG Handbook](#)



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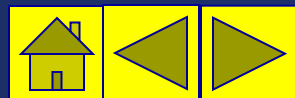
# North Atlantic Communication Navigation and Surveillance Group (NAT CNSG)

- **Objectives**

- Develop the methodology for the CNS systems implementation process including harmonisation of implementation activities, monitoring requirements, reporting functions and arrangements among its members for use and distribution of CNS related data
- Develop success criteria and methodology, inclusive of a safety analysis, for assessment of implementation programs
- Evaluate CNS systems' end to end performance
- Establish and oversee configuration management for the implementation of CNS systems for the NAT Region
- Identify and resolve procedural and technical issues critical to the success of CNS systems implementation
- Develop application level messages for ground/ground forwarding of data between ATC units



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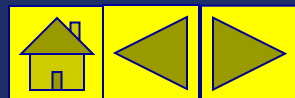


# North Atlantic Communication Navigation and Surveillance Group (NAT CNSG)

- Implement and administer a CNS performance/problem monitoring and reporting system
- Develop procedural and/or technical improvements to the use of CNS systems in the NAT Region
- **Web site**
  - [NAT SPG Handbook](#)



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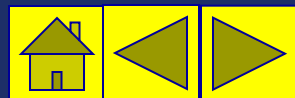
# Grupo Regional CAR/SAM de Planificacion Y Ejecucion/ Caribbean and South American Regional Planning and Implementation Group (GREPECAS)

- **Objectives**

- Continuous and coherent development of the CAR/SAM Air Navigation Plan and other relevant regional documentation in a manner that is harmonized with adjacent regions
- Facilitate the implementation of air navigation systems and services as identified in the CAR/SAM air navigation plan with due observance to the primacy of air safety and security; and
- Identification and addressing of specific deficiencies in the air navigation field



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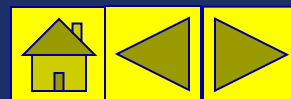
# Directors of Civil Aviation of the Eastern Caribbean (E/CAR) Working Group

- **Objectives**

- To examine problems affecting airspace organization and utilization in the Eastern Caribbean region, including problems affecting all fields of Air Navigation in the Eastern Caribbean Region



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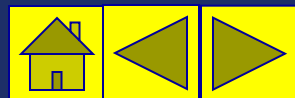
# Directors of Civil Aviation of the Central Caribbean (C/CAR) Working Group

- **Objectives**

- To continue and follow-up the actions to improve and develop air navigation systems in the Caribbean, and as part of it, in the Central Caribbean



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# Asia Pacific Air Navigation Planning and Implementation Regional Group (APANPIRG)

- **Objectives**

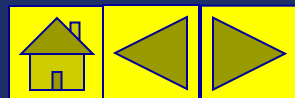
- To ensure continuous and coherent development of the Asia/Pacific Regional Air Navigation Plan and other relevant regional documentation in a manner that is harmonized with adjacent regions, consistent with ICAO SARPs and Global Air Navigation Plan for CNS/ATM systems (DOC 9750) and reflecting global requirements;
- To facilitate the implementation of air navigation systems and services as identified in the Asia/Pacific Regional Air Navigation Plan with due observance to the primacy of air safety, regularity and efficiency; and
- To identify and address specific deficiencies in the air navigation field

- **Web site**

- [APANPIRG](http://APANPIRG.org)



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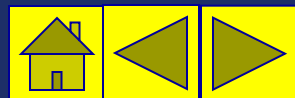
# APANPIRG Air Traffic Management/Aeronautical Information Services/Search and Rescue Subgroup (ATM/AIS/SAR/SG)

- **Objectives**

- Ensure the continuing and coherent development of the Asia/Pacific Regional Air Navigation Plan for the new CNS/ATM systems in the ATM/AIS/SAR fields
- Review and identify deficiencies that impede the implementation or provision of efficient ATM/AIS/SAR services in the Asia/Pacific region
- Monitor CNS/ATM systems research and development, trials and demonstrations in the fields of ATM/AIS/SAR and facilitate the transfer of this information and expertise between States
- Make specific recommendations aimed at improving ATM/AIS/SAR services by the use of existing procedures and facilities and/or through the evolutionary implementation of CNS/ATM systems
- Review and identify inter-regional coordination issues in the fields of ATM/AIS/SAR and recommend actions to address those issues



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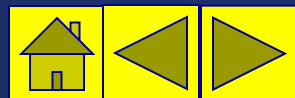
# Regional Airspace Monitoring Safety Advisory Group (RASMAG)

- **Objectives**

- Facilitates the safe implementation of reduced separation minima and CNS/ATM applications within the Asia and Pacific Regions in regard to airspace safety monitoring
- Assists States in achieving the established levels of airspace safety for international airspace within the Asia and Pacific Regions



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# Informal Pacific ATC Coordinating Group (IPACG)

- **Objective**

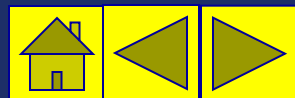
- Provides an opportunity for air traffic service (ATS) providers and airspace operators to informally meet together and explore solutions to near term ATC problems that limit the capacity and/or efficiency within the Anchorage, Oakland and Tokyo Oceanic Flight Information Regions (FIRs)

- **Web site**

- [IPACG](#)



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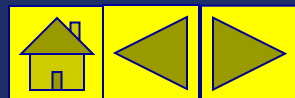


# Informal South Pacific ATS Coordinating Group (ISPACG)

- **Objective**
  - To promote a cost effective South Pacific Air Traffic Services aviation environment that is responsive to change, meets the needs of the aviation industry, is economically sustainable and maintains or enhances present levels of safety
- **Web site**
  - [ISPACG](#)



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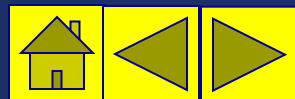


# Cross Polar Russian Trans East ATM Providers' Working Group (CPWG)

- **Objective**
  - Provides a forum to improve air traffic services (ATS) for aircraft transiting polar and Russian Far East (RFE) airspace
- **Web site**
  - [Cross Polar Working Group](#)



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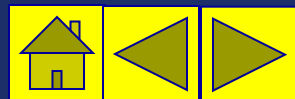


# Oceanic Work Group

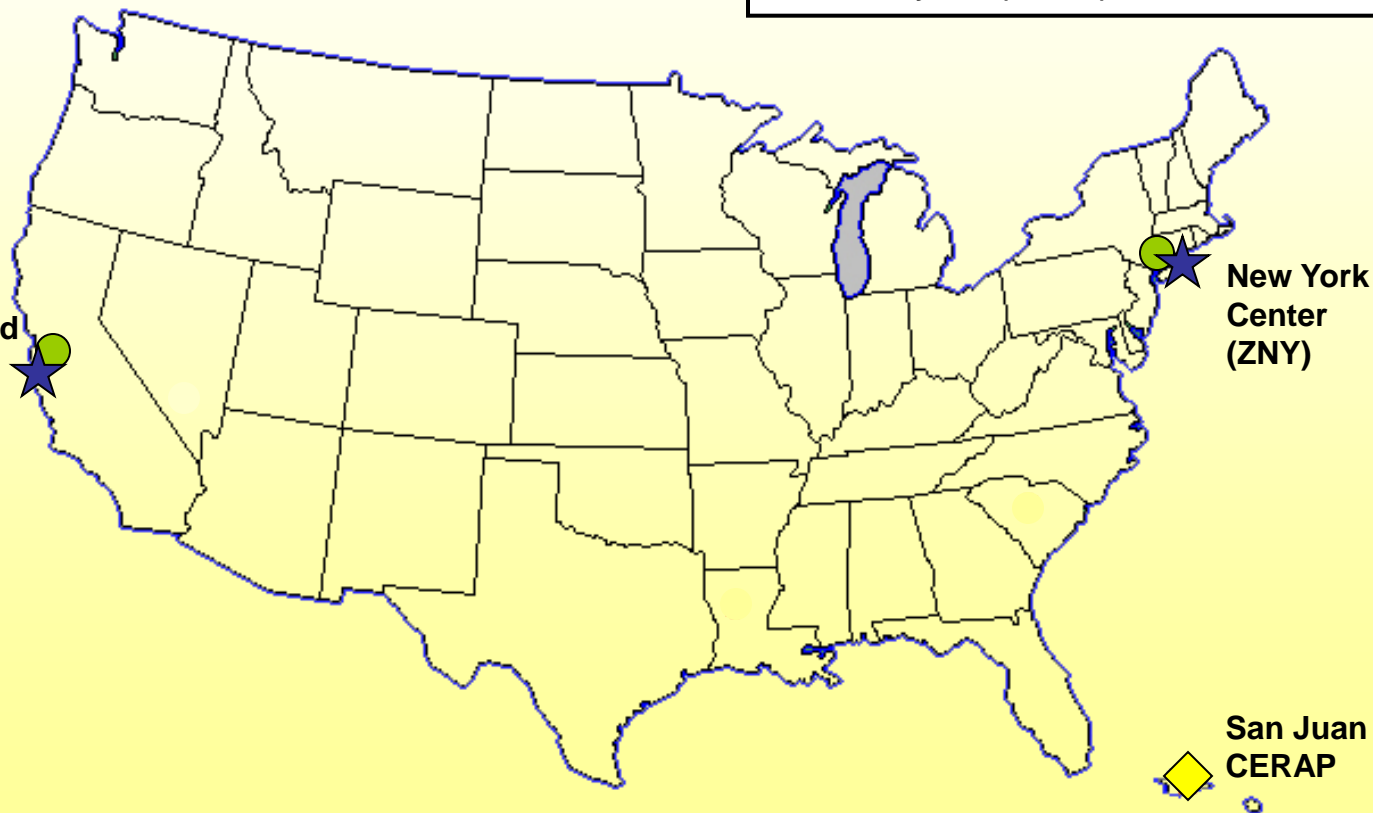
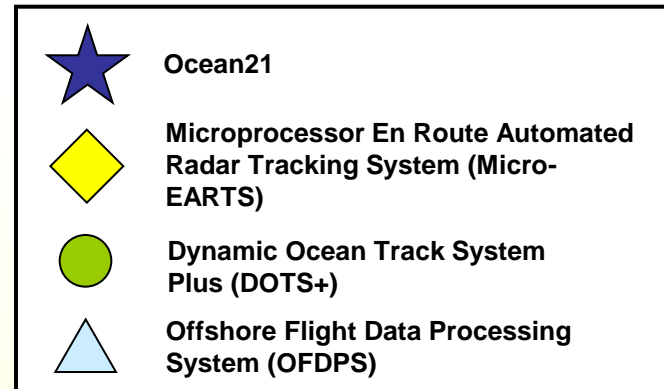
- **Objective**
  - Serves as a user-provider forum working to improve the safety and efficiency of oceanic air traffic services in the Pacific
- **Web site**
  - [Oceanic Work Group](#)



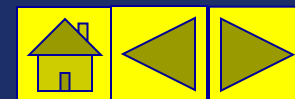
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# Oceanic & Offshore Automation



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# Ocean21

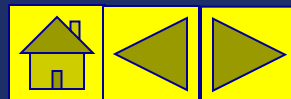
- **Ocean21 is a single integrated oceanic system for all three oceanic air traffic control centers combining common procedures, training, maintenance and support**
- **Fully integrates flight and radar data processing**
- **Enhanced Conflict Probe to detect conflicts between aircraft**



- **Provides CPDLC, AIDC, and ADS surveillance capabilities**
- **Automates the manual processes of the past**



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# Ocean21 Accomplishments



## Oakland Center

- Began daily operational use in June 2004
- Achieved full 24/7 transition in October 2005



## New York Center

- Began initial live operations in March 2005
- Achieved full 24/7 transition in June 2005

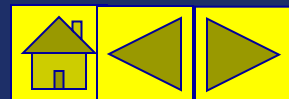


## Anchorage Center

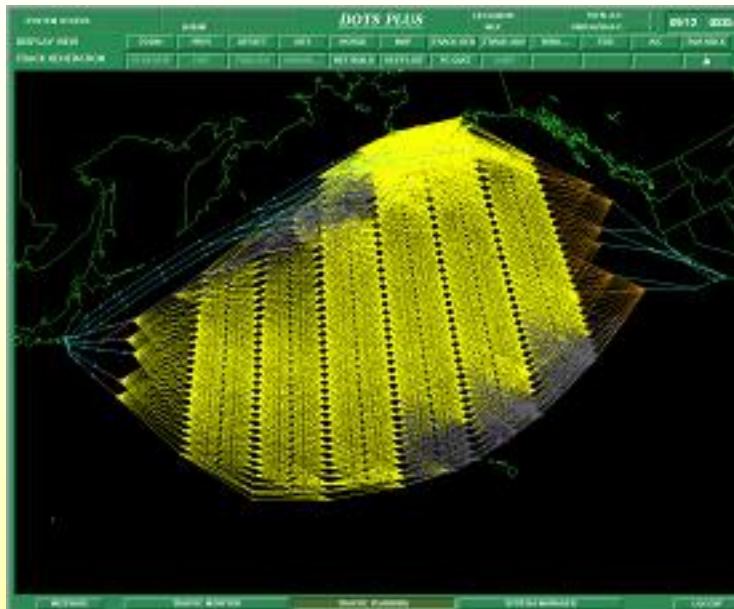
- Began initial live operations in March 2006
- Achieved full 24/7 transition in March 2007



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# Dynamic Ocean Track System Plus (DOTS+)



SYSTEM STATUS: DOTS PLUS 09/12 17:05:52

DISPLAY VIEW: ZOOM PREV OFFSET SITE WORLD MAP TRACK GEN TRACK ADV WIND... FDIH A/C SUA DBLK

TRACK ADVISORY: TRACK FLTS WK SHEET GRL ANALYSIS CDTL SEND MSG CONFIG MSG HIST ARCHIVE PAUSE QUIT TA

### Track Advisory Controller Worksheet

FLID	Req	Dept	Departure	Schd	Actl	ETE	Stway	Entry	SEP	ALT	TRK	Comments
UAL119	2115	KBFO	2115/D	040	2155	029	310	B				TESTING MERGE UAL119
UAL181	2045	KLAX	2058/D	077	2215	020	310	B				TESTING MERGE UAL181
***** TRACK F *****												
KAL017	1940	KLAX	1940/D	058	2038	999	310	F				
COA901	1940	KLAX	1942/D	076	2058	020	310	F				
UAL377	2105	KBFO	2105/D	025	2130	022	310	F				
COA971	2050	KLAX	2050/D	060	2150	020	310	F				
***** TRACK G *****												
KAL001	1820	KLAX	1820/D	058	1918	999	310	G				
UAL853	1855	KLAX	1855/D	027	1922	004	280	G				
UAL819	1935	KLAX	1935/D	028	2003	041	280	G				
UAL817	1915	KLAX	1915/D	059	2014	011	310	G				
DAL79	1915	KLAX	1924/D	059	2023	009	280	G				

Sort Worksheet by: Altitude Time

TRF Input:

Cancel Flight Add Flight Edit Flight Print Close

### Track Advisory Mode

#### Negotiation

Track Advisory Message History

Display Messages: In Out Log All

COA951: 2140. KLAX. RJAA. 310. F. 2239.39. Wheels up to UTC fix time is too shc option number 4

COA952: 2125. KLAX. RJAA. 310. F. 2224.25. Wheels up to UTC fix time is too shc option number 4

COA956: 2044. KBFC. RJAA. 310. F. 2112.30. Wheels up to UTC fix time is too shc option number 3

COA961: 1915. KBFO. RJAA. 310. F. 1940.30. Wheels up to UTC fix time is too shc option number 4

COA963: 1900. KLAX. RJAA. 310. F. 1953.30. Wheels up to UTC fix time is too shc option number 4

COA971: 1915. KLAX. RJAA. 310. F. 1942.40. Wheels up to UTC fix time is too shc option number 3

COA981: 1915. KLAX. RJAA. 310. F. 1942.40. Wheels up to UTC fix time is too shc option number 3

\*\*\*\*\* Listings compiled by TMD personnel 09/12/00 \*\*\*\*\*

\*\*\*\*\* System set to NEGOTIATION mode 09/12/00 17: \*\*\*\*\*

Message:

Add Print Close

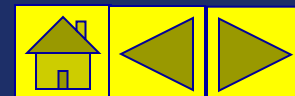
MESSAGE TRAFFIC MONITOR TRAFFIC PLANNING SYSTEM MANAGER LOGOFF

- **DOTS+ provides**

- Decision support software tools for Traffic Management Coordinators (TMC) and Supervisory Air Traffic Control Specialists (SATCS)
- Track Generation to Tokyo FIR and the South Pacific
- Track Advisory for the Pacific, Russian Trans-East and Polar routes



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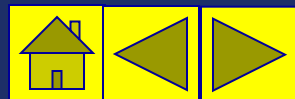


# Microprocessor En Route Automated Radar Tracking System (Micro-EARTS)

- **Micro-EARTS is the operational air traffic control platform for Offshore FAA and Department of Defense sites**
  - Honolulu
  - Guam
  - Anchorage
  - San Juan
  - Fort Polk
  - Shaw Air Force Base
  - Nellis Air Force Base
- **Micro-EARTS is also the platform for the FAA's Alaska Capstone initiative**
- **Provides the radar platform for Ocean21**



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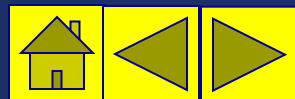


# Offshore Flight Data Processing System (OFDPS)

- **OFDPS provides flight data processing to Hawaii and Guam**
  - **Interfaces with Micro-EARTS at Hawaii and Guam**
  - **Provides flight strips to the HCF, Guam CERAP and terminal facilities**



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# Moving Ocean Towards NextGen

Current Mission

*Evolving Mission*

Focus on  
Wholesale  
Infrastructure  
Replacement

ATOP  
Success!

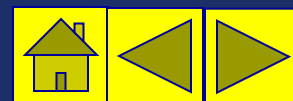
*Near-Term  
Improvements,  
Demonstrating  
Key NextGen  
Concepts*

Oceanic Modernization

*Development of NextGen*

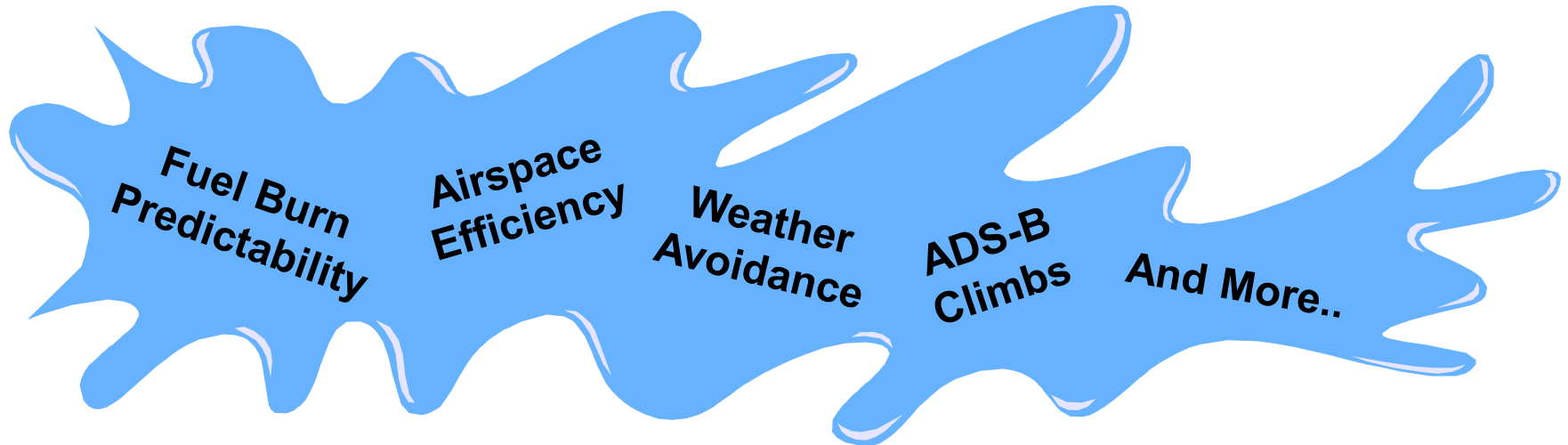
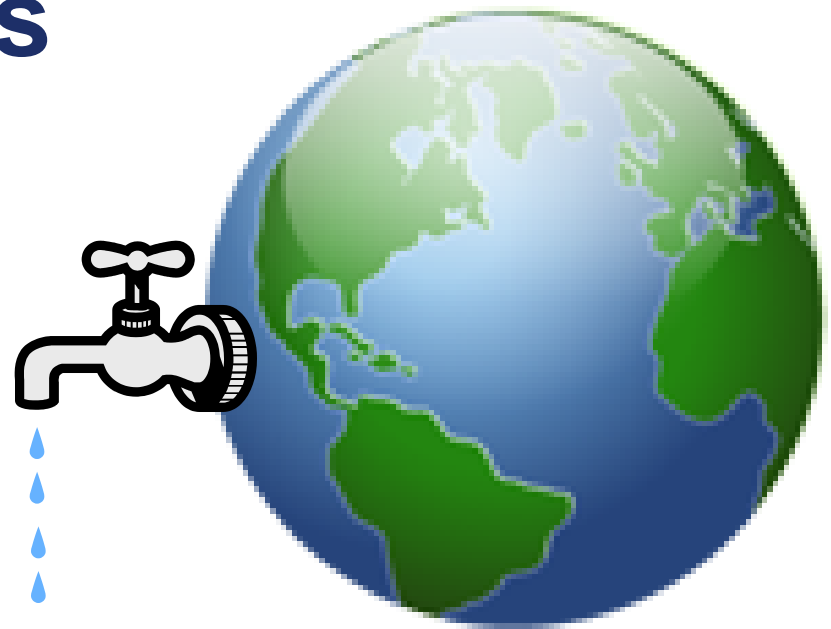


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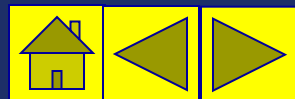


# Untapped Benefits In the Ocean

*Successful modernization  
has paved the way to  
pursue untapped oceanic  
benefits in the near-term*



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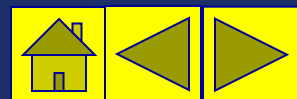
# Oceanic NextGen Initiatives

## Near, Mid and Long Term

- In-Trail Procedures based on ADS-B and ADS-C
- Online Track Advisory using DOTS+
- Web-Enabled Collaborative Trajectory Planning
- Oceanic Trajectory Management 4-D (Pre-Departure and In-Flight)
- Oceanic/Coastal Tailored Arrivals
- Oceanic Trajectory Managed Airspace Concept Development
- Oceanic Separation Minima below 30/30/RNP-4
- ADS-B Based Airborne Separation Assistance Systems (ASAS)
- Integration of Coastal Airspace into the Oceanic Platform
- Global Data Exchange



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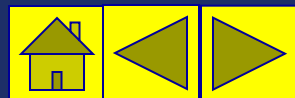


# Useful Links

- [ICAO Global Operational Data Link Document \(GOLD\)](#)
- [International Civil Aviation Organization \(ICAO\)](#)
- [Oceanic Separation Reduction Work Group \(OSRWG\)](#)
- [Pacific Comm/Nav/Surveillance \(CNS\) Requirements/Options](#)
- [Reduced Vertical Separation Minimum](#)
- [Aeronautical Navigation Products](#)
- [Notices to Airmen \(NOTAM\)](#)



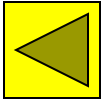
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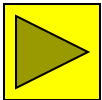
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Home



Last Slide Viewed



Next Slide

# Questions or Comments?

Contact Leslie McCormick

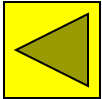
Phone: (417) 546-2412

email: [LMcCormick@cssiinc.com](mailto:LMcCormick@cssiinc.com)

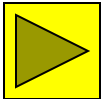
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